ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. #332890
NH000-0001-04(062)
Spalding County
SR 16 Turn Lanes @ SR3/US 19

OFFICE Design Policy & Support

DATE May 18, 2010

FROM for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED REVISED CONCEPT REPORT**

Attached is the approved Revised Concept Report for the above subject project.

Attachment

DISTRIBUTION:

Genetha Rice-Singleton, Program Control Adminstrator
Ron Wishon, State Project Review Engineer
Glenn Bowman, State Environmental Administrator
Ken Thompson, Statewide Location Bureau Chief
Michael Henry, Systems & Classification Branch Chief
Keith Golden, State Traffic Operations Engineer
Angela Alexander, State Transportation Planning Administrator
Paul Liles, State Bridge Engineer
Bobby Hilliard, State Program Delivery Engineer
Angela Robinson, Financial Management Administrator
Jeff Baker, State Utilities Engineer
Kerry Gore, District Utilities Engineer
Bill Rountree, District Preconstruction Engineer
David Millen, District Engineer
Jeremy Busby, Project Manager
BOARD MEMBER

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

REVISED PROJECT CONCEPT REPORT

Project Number: NH000-0001-04(062)
County: Spalding
P. I. Number: 332890
Federal Route Number: US 19
State Route Number: SR 16 & SR 3

The changes to the approved 2002 Revised Concept Report include replacing the existing dual steel bridges with a single concrete bridge, relocating and widening the southbound entrance ramp onto SR 3/US 19 to two-lanes, raising and widening the southbound exit ramp from SR 3/US 19 to accommodate a 3-foot increase in the proposed profile, using a hybrid typical section with 10-foot rural shoulder and 12-foot urban shoulder on SR 16, widening the southbound SR 3/US 19 bridge over Poplar Road, replacing the existing southbound SR 3/US 19 bridge deck over Poplar Road, shifting Carver Road to a new location further west from its' existing location, extending the project limits west to Pine Hill Road and east to Spalding Drive, adding signal timing to two existing signals, and providing 2 additional signals rather than 3. These changes are based on the implementation of the approved Value Engineering recommendations (February 10, 2009) and on the approved revised Traffic Study (January 2010).

Submitted for approval:

DATE 3/18/10 — Columbia Engineering
Design Consultant Name and Firm Name

DATE _____ — N/A
Local Government

DATE _____ — N/A
Design Phase Office Head

DATE 3/19/2010 — Bobby Hilliard
Office Head (Project Manager's Office)

DATE 3/19/10 — Jeremy T. Busby
Project Manager

Recommendation for approval:

DATE 4/8/2010 — Glenn Bowman - Recommendation on file
State Environmental Administrator

DATE 4/7/2010 — Paul Liles - Recommendation on file
State Bridge Design Engineer

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Program (RTP) and/or the State Transportation Improvement Program (STIP).

DATE 4/16/10 — Angela T. Alexander
State Transportation Planning Administrator

REVISED PROJECT CONCEPT REPORT

Need and Purpose: See attached document.

Project location: This project is located in central Spalding County at the interchange of SR 16 and SR 3/US 19. The project corridor east of the interchange with SR 16 and SR 3/US 19 is located within the city limits of Griffin, and the corridor west of the interchange is outside of the city limits of Griffin. The project length is 1.02 miles along SR 16 and 0.51 miles along the relocated southbound exit and entrance ramps. SR 16 runs from Mile Post 11.57 to 12.59.

Description of the approved concept:

PDP Classification: Major X Minor _____

Federal Oversight: Full Oversight ( ), Exempt (X), State Funded ( ), or Other ( )

Functional Classification: Urban Minor Arterial

U. S. Route Number(s): US 19 / 41 **State Route Number(s):** SR 16, SR 3

Traffic (AADT) as shown in the approved concept:
Base Year: (2003) 19,900 Design Year: (2023) 39,700

Updated traffic data (AADT):
Base Year: (2015) 21,100 Design Year: (2035) 27,050

Approved Programmed/Schedule:
P.E.: 1999 R/W: 2015 Construction: 2016

VE Study Required **Yes (X)** **No ( )** **Held:** 02/10/2009

Benefit/Cost Ratio: 3.55

Is the project located in an Ozone Non-attainment area? **Yes (X)** **No ( )**

Is the project in a PM2.5 Non-attainment area? **Yes (X)** **No ( )**
According to the Atlanta TIP, this project is exempt from air quality analysis, and therefore, no conformity documentation is required.

Approved Features:	**Proposed Features:**
The following items will be revised from the 2002 Revised Concept Report based on the implementation of the Value Engineering approved recommendations and the revised Traffic Study: • Proposed dual left turn lanes for vehicles turning south onto SR 3/US 19. This will change due to revised traffic study stating to stripe out one lane because new traffic counts are lower. • Typical section within interchange limits has four 12' lanes with outside curb and gutter, one 12' left turn lane eastbound, two 12' left turn lanes, and an 8' raised median.	The concept report has been revised with the following items: • Replace existing dual steel bridges on SR 16 with longer single concrete girder bridge; will accommodate four through lanes, dual left turn lanes WB, and single left turn lane EB. • SB entrance ramp onto SR 3/US 19 will be relocated west of its' current location to provide additional stacking across bridge for turning vehicles and provide 4:1 slopes in-between the ramp and SR 3/US 19; shifting alignment will allow removal of the existing

This is changing because of the VE implementation to eliminate the raised median on the bridge and to use a hybrid typical section. • Existing dual steel bridges will be jacked and widened to accommodate the additional lanes. This is changing because a bridge Life Cycle Cost Analysis was performed and showed that replacing the bridges would be more cost efficient than widening the existing bridges. • Project termini began at Mt. Zion Road, approximately 0.44 miles (mile post 11.46) west of the interchange at SR 3/US 19, and ended at the Lowe's driveway, approximately 0.25 miles (mile post 12.15) east of the interchange, for a length of 0.69 miles. This is changing because FHWA's requirement for logical termini. • Additional right-of-way will be required for the construction of the widening on SR 16 and the SB ramp. This is changing because widening on SR 16 is extended in both directions and because the SB ramp is shifting more westward, both of which will require additional right-of-way. • Carver Road will be realigned to intersect SR 16 approximately 400 feet to the west of its current location. This realignment will provide a distance of 660' between the median openings at Carver Road and at the intersection with the southbound ramps from SR 3/US 19. This is changing because the SB ramp onto SR 3/US 19 is shifting westward onto new location, and hence, Carver Road's new location will be shifted further west and will require additional right-of-way. • Traffic signals were proposed for both ramp intersections with SR 3/US 19. This is changing because signal timing modifications will be required, based on the updated traffic study volumes.	guardrail; the new ramp will be concrete pavement and will accommodate two lanes. • SR 3/US 19 bridge over Poplar Road will be widened to accommodate the merging SB dual lane entrance ramp, as per the current GDOT standards; the existing bridge deck will also be replaced. • As per the approved Traffic Study, one of the SR 16 west bound dual left turn lanes onto SR 3/US 19 and one of the dual ramp lanes will be striped out for future use. • SB exit ramp from SR 3/ US 19 will remain on its' current location, but will be raised approximately 3' to accommodate the new bridge profile. • Intersection with SR 16 and the southbound ramps will be overlaid with concrete pavement from the approach slabs to the radius return of the ramps. • Carver Road will be realigned west of its current location by approximately 590'. • Typical sections along SR 16 have been revised; section 1 has a four lane hybrid section with 14-foot flush median, 10' rural shoulders on the north side of SR 16, and 12' urban shoulders on the south side of SR 16 from Pine Hill Road to relocated Carver Road; section 2 has a four lane hybrid section with 20-foot raised concrete median, 10' rural shoulders on the north side of SR 16, and 12' urban shoulders on the south side of SR 16 from relocated Carver Road to Spalding Drive; proposed new bridge will not have a raised median, as it will be accommodating dual left turn lanes in place of the raised median. • Carver Road's typical section has been revised to a sidewalk on the southwest side only, which is where the Griffin High School student parking lot is located; the typical section will maintain two 12-foot lanes with 12' urban shoulders. • Project Logical Termini have been extended westward to Pine Hill Road (Mile Post 11.57) and eastward to Spalding Drive (Mile Post 12.59), for a total length of 1.02 miles. • Additional right-of-way will be required for ramp realignments, SR 16 widening, and Carver Road relocation. • Signal timing modifications will be required for the existing signals at Spalding Drive

	and Lowe's driveway; there are proposed signals at both of the entrance ramps onto SR 3/US 19. • No design variances or design exceptions are required for this proposed project.
Reason for Change: Value Engineering Recommendations to reduce construction and ROW costs and the revised Traffic Study and traffic volumes.	

Updated Cost Estimate	
Construction including Contingencies, Engineering, and Inspection	**$9,084,864.00**
Fuel Adjustment	**$853,320.00**
Right-of-Way	**$3,001,950.00**
Utilities (reimbursable)	**$103,250.00**
Utility Contingencies	
Environmental Mitigation	**$0**

Recommendation: It is recommended that the proposed revision to the concept be approved for implementation.

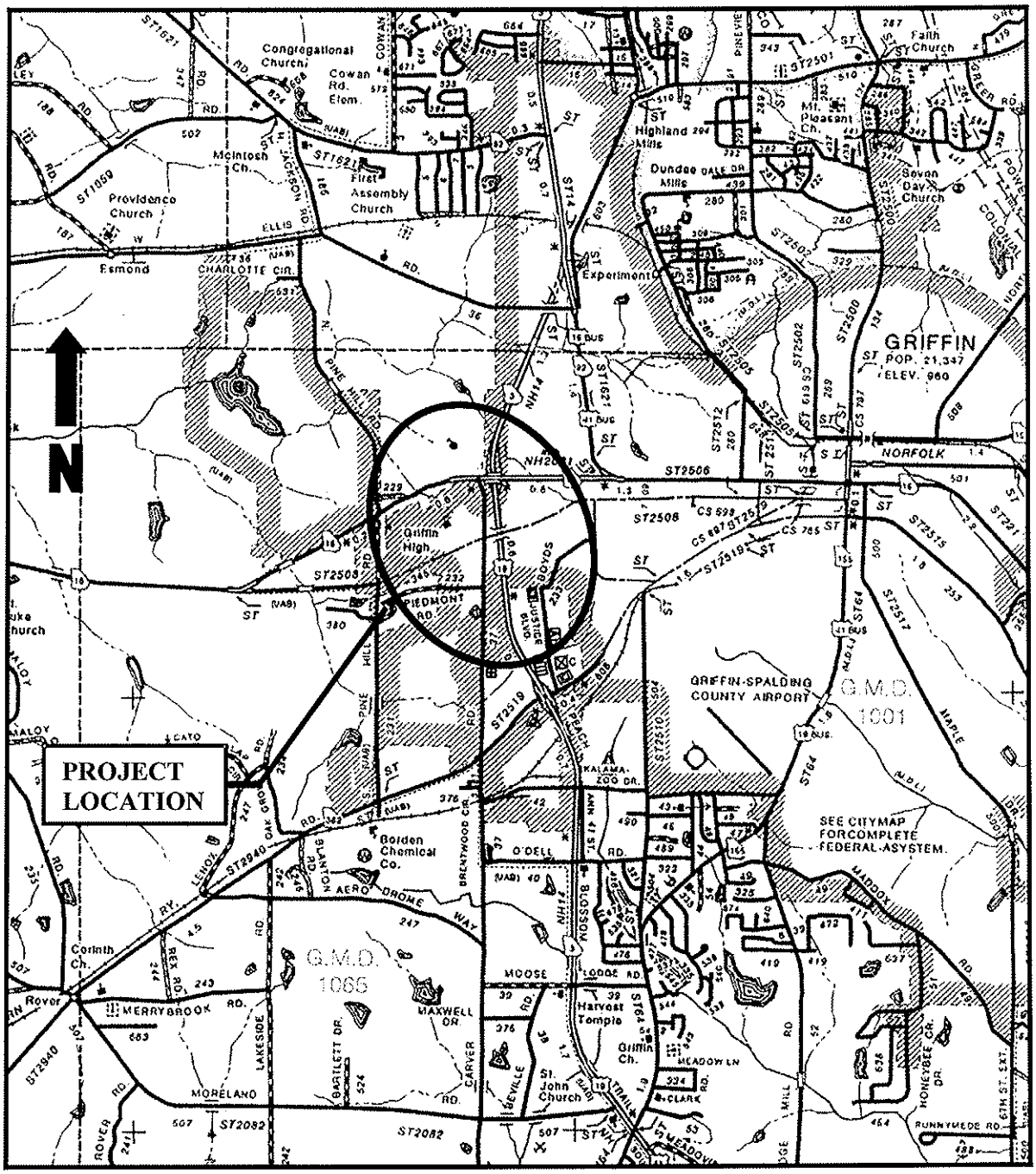
Attachments:

1. Sketch Map,
2. Need and Purpose Statement,
3. Cost Estimates, including fuel adjustment
4. Typical Sections,
5. Traffic Diagrams,
6. Approved Traffic Study,
7. Approved Value Engineering Implementation Letter, and
8. B/C Ratio Worksheet.

Concur: _____
Director of Engineering

Approve: _____ Date: 5/12/2010
Chief Engineer

PROJECT LOCATION MAP



NOT TO SCALE

NH000-0001-04(062), Spalding County
SR 3/US 19 Turn Lanes at SR 16 in Griffin
PI 332890

Need and Purpose Statement
SR 3/US 19 Turn Lanes @ SR 16 in Griffin, Spalding County
Project NH000-0001-04(062), PI# 332890

Description of Existing Roadways

SR 16 intersects SR 3/US 19 just west of the City of Griffin in Spalding County. SR 16 is currently a 3-lane section west of the intersection and a 4-lane section east of the intersection. SR 3/US 19 is a four-lane section in the vicinity of the project.

These two roadways intersect as a grade-separated diamond-configuration interchange with SR 16 passing over the top of SR 3/US 19 as dual 2-lane bridges. The eastbound bridge currently has a sufficiency rating of 66.84 whereas the westbound bridge currently has a sufficiency rating of 64.44. SR 16 is designated as a functional classification of Urban Minor Arterial.

Land Use

The Spalding County Comprehensive Plan illustrates the existing land use in the area to be mostly public/institutional in the form of the local elementary and high schools and the Griffin Technical Institute. Light industry uses are currently located just south of this intersection along SR 3/US 19. The remainder of the local land use is generally a mix of light residential and commercial office space within downtown Griffin.

The Comprehensive Plan predicts dramatic future land use development within the area of this intersection. It anticipates the existing light residential and commercial office space shifting to much larger-scale regional commercial uses. Heavier industry is anticipated to move in south of the intersection and the existing single family residential area will see more intense development with the move towards more medium density developments. These projected land use changes reflect the projected growth in this region which will increase the traffic volumes in the area around the intersection.

Existing Conditions

The roadway level-of-service ("LOS"), intersection LOS, and accident rate analyses provided serve to highlight the need at this particular location. The information shown illustrates that

this intersection is currently experiencing clear operational deficiencies and above-average crash rates based upon the following analysis.

Existing traffic volumes on SR 16, within the vicinity of the intersection, range from approximately 13,000 vpd to 19,000 vpd based upon 2009 GDOT traffic counts. The corresponding LOS information is presented in Table 1 below. The existing 2009 traffic can be seen attached.

Table 1: Roadway LOS (2009)

Roadway Segment	Direction	Weekday LOS	
		Year 2009	
		AM	PM
SR 16 West of Pine Hill Rd	Overall	B	C
SR 16 West of Pine Hill Rd and School	Overall	C	C
SR 16 between the School and Carver Rd	Overall	C	C
SR 16 between Carver Rd and US 19/41 ramps	Overall	**D**	**D**
SR 16 between US 19/41 NB and SB ramps	Overall	**D**	**D**
SR 16 east of US 19/41 ramps	Eastbound	A	A
	Westbound	A	A
SR 16 east of Spalding Drive	Eastbound	A	A
	Westbound	A	A
Drewry Rd north of SR 16	Overall	A	A
Carver Rd south of SR 16	Overall	A	A

Source: Traffic Concept Study for SR 16 Interchanges at US 19/41, prepared by Street Smarts

As shown in Table 1, SR 16 is currently experiencing roadway operational/capacity issues within both the AM and PM peak hour. SR 16 between Carver Road and both of the US 19/41 ramps is operating at a LOS D, which is considered unacceptable.

Table 2: Intersection LOS (2009)

Intersection	Control	Movement	Weekday LOS	
			Year 2009	
			AM	PM
SR 16 at Pine Hill Rd	Signal	Overall	B	B
SR 16 at School Entrance/Exit	Minor Street Stop	NB	**D**	C
		EB	A	A
		WB	B	A
SR 16 at Carver	Minor Street Stop	NB	**D**	C
		SB	B	**D**
		EB Left Turn	A	A
		WB Left Turn	B	A

SR 16 at SB Ramps	Minor Street Stop	SB	**D**	**F**
		EB	A	A
		WB	B	B
SR 16 at NB Ramps	Minor Street Stop	NB	**F**	**F**
		EB	A	A
		WB	A	A
SR 16 at Lowe's	Signal	Overall	B	A
SR 16 at Spalding Drive	Signal	Overall	C	B

Source: Traffic Concept Study for SR 16 Interchanges at US 19/41, prepared by Street Smarts

Table 2 further illustrates intersection operational deficiencies at this location within both the AM and PM peak hour. As shown, the intersection of SR 16 and the SR 3/US 19 ramps is currently operating at an unacceptable LOS in both the AM and PM peak hour. In addition, other operational deficiencies exist at both the intersection of SR 16 and Carver Road and the intersection of SR 16 and the Griffin High School driveway.

Crash Analysis

A comparison of the 2006, 2007, and 2008 accident and injury rates along SR 16 in the area of the intersection compared to the corresponding statewide average rates for similar facilities is presented in Table 3. This information illustrates that accident rates in this area have been slightly below the statewide average in previous years; however, injury rates were above the statewide average for two of the past three years for which complete crash data is available.

Table 3: SR 16 Accident/Injury Rates

	Year 2006	Year 2007	Year 2008
SR 16 Accident Rates	425	414	324
Statewide Accident Rates	531	514	471
SR 16 Injury Rates	**296**	108	**180**
Statewide Injury Rates	132	126	116

Rates presented are per 100 Million Vehicle Miles

Further analysis indicates that 57 of the 66 (86%) accidents that have occurred in this vicinity were either rear-end or angle-intersecting type collisions.

Future Conditions (2015/2035)

Traffic volumes for the years 2015 and 2035 were obtained through projections based upon GDOT historical counts and expected growth patterns in the area. The 2015 and 2035 projected AADT and Design Hourly Volumes can be seen attached. These traffic projections were provided by the GDOT Office of Environment and Location.

Intersection LOS analysis was performed using these projected traffic volumes to calculate the corresponding LOS information for a "no-build" scenario in both 2015 and 2035. This information is presented in Table 4.

Table 4: Intersection LOS (2015, 2035)

Intersection	Control	Movement	Weekday LOS			
			Year 2015		Year 2035	
			AM	PM	AM	PM
SR 16 at Pine Hill Rd	Signal	Overall	C	C	C	C
SR 16 at School Entrance/Exit	Minor Street Stop	NB	**E**	C	**F**	**E**
		EB	A	A	A	A
		WB	B	A	B	A
SR 16 at Carver	Minor Street Stop	NB	**D**	C	**F**	**F**
		SB	**F**	**E**	**F**	**F**
		EB Left Turn	A	A	A	A
		WB Left Turn	B	A	C	B
SR 16 at SB Ramps	Minor Street Stop	SB	**F**	**F**	**F**	**F**
		EB	A	A	A	A
		WB	C	C	**F**	**E**
SR 16 at NB Ramps	Minor Street Stop	NB	**F**	**F**	**F**	**F**
		EB	B	A	C	C
		WB	A	A	A	A
SR 16 at Lowe's	Signal	Overall	B	A	B	A
SR 16 at Spalding Drive	Signal	Overall	B	C	C	C

Source: Traffic Concept Study for SR 16 Interchanges at US 19/41, prepared by Street Smarts.

Table 4 illustrates prevalent level-of-service deficiencies within the project limits and continued peak hour operational deterioration in years 2015 and 2035. In 2035, the intersections of SR 16 with the southbound and northbound ramps of SR 3/US 19, Carver Road, and the school entrance/exit west of Carver Road are all shown to have unacceptable LOS for at least one particular movement. In addition, the poor LOS conditions on the stop-controlled minor street

approaches of the Carver Road intersection and the School Entrance/Exit intersection suggest the need for improving operational performance.

Description of Proposed Improvements

These operational deficiencies illustrate a clear need within this area for operational type improvements as proposed by this project. In response to the safety and operational issues identified, the Department is proposing GDOT project PI# 332890, which is a reconstruction/rehabilitation type project to primarily install turn lanes.

More specifically, this proposed project consists of widening SR 16 to add left turn lanes for vehicles entering onto SR 3/US 19. The existing dual 2-lane bridges over SR 3/US 19 will need to be widened to accommodate these turn lanes.

In addition, the existing Carver Road intersection, to the west of SR 3/US 19, would be closed and relocated further away from the SR 3/US 19 intersection and a left turn lane from SR 16 onto Carver Road will be provided. Carver Road will be realigned to accommodate this change.

In addition, the existing 3-lane sections of roadway within the project limits will be overlaid and re-striped to provide 4 lanes. Also, the project proposes to add traffic signals for both of the entrances onto SR 3/US 19.

The project PI 332890 is currently listed within the Atlanta Regional Commission's long range plan with both ROW and CST listed as unfunded.

Logical Termini

Western Terminus

As shown in the attached projected 2015 and 2035 traffic data, there is a demonstrated 23% drop in traffic volumes at Pine Hill Road when traveling westbound along SR 16. This substantial drop in traffic illustrates a lessened need for any type of operational improvements west of Pine Hill Road. Furthermore, previous analysis shown in Table 1 and Table 4 reveal that the SR 16 roadway is operating acceptably west of Pine Hill Road (LOS "B"/"C") and that the Pine Hill Road intersection is expected to operate acceptably into the design year (LOS "C"). This LOS analysis further reveals that the need for operational type improvements west of Pine Hill Road is significantly lessened.

In addition, accident rates along SR 16 drop dramatically when traveling westbound past Pine Hill Road. Table 5 illustrates the accident rates within the project limits compared to west of Pine Hill Road.

Table 5: Accident Rate Comparison

	Accident Rates			Injury Rates		
	Year 2006	Year 2007	Year 2008	Year 2006	Year 2007	Year 2008
Within Project Limits	425	414	324	296	108	180
West of Pine Hill Road	127	76	127	76	0	76

Rates presented are per 100 Million Vehicle Miles

Based upon a clear reduction in traffic volumes and large reduction in accident and injury rates, Pine Hill Road is seen as the western logical terminus for this project.

Eastern Terminus

As shown in Table 1, SR 16 east of Spalding Drive has a current roadway LOS of A. In addition, the intersection of SR 16 and Spalding Drive has been shown to have an acceptable LOS of C into year 2035. Based upon this analysis, it is apparent that an operational need does not continue on SR 16 east of Spalding Drive. In addition, SR 16 maintains a full 4-lane section east of Spalding Drive. This location provides an effective terminus for tying into the existing roadway.

Based upon a demonstrated lack of need and tying into an existing and well-operating 4-lane section, Spalding Drive is seen as the eastern logical terminus for this project.

Bike Facilities

SR 3/US 19 and SR 16 in the vicinity of this project have not been identified as potential routes for accommodating bicycle facilities in the McIntosh Trail Bike and Pedestrian Plan, the Spalding County Comprehensive Transportation Plan, the Atlanta Regional Bicycle Transportation and Pedestrian Walkways Plan, and the statewide bicycle and pedestrian plan.

Other Projects in the Area

There are two other proposed GDOT projects in the immediate vicinity of this project. PI M004034 is a maintenance/resurfacing project along SR 16 from Spalding Drive to CR 67/Green

Valley Road. This maintenance is scheduled to be let in fiscal year 2010. Similarly, PI M004146 is another maintenance/resurfacing project along SR 16 from the Coweta County line to Spalding Drive. This project is also currently scheduled to be let in fiscal year 2010.

Table 6: Other Projects in the Area

PI Number	Project Type	Description	Year
M004034	Resurfacing & Maintenance	SR 16 FM CS 869/SPALDING DRIVE TO W OF CR 67/GREEN VALLEY RD	2010
M004146	Resurfacing & Maintenance	SR 16 FROM COWETA COUNTY LINE TO CS 869/SPALDING DRIVE	2010

Need and Purpose

Through an examination of traffic volumes, LOS analysis, and accident/injury rates, it is apparent that the intersection of SR 16 with SR 3/US 19 has well-defined operational and safety deficiencies. These deficiencies highlight operational and safety issues that could be improved with the implementation of the proposed project. Roadway and intersection LOS analyses for the current and projected future years indicate operational problems for a variety of traffic movements in the area. In addition, accident rate analysis has indicated above-average injury rates within the vicinity of the proposed project.

Project PI 332890 should mitigate the operational and safety deficiencies shown. The installation of turn lanes, installation of traffic signals, and the slight relocation of the Carver Road intersection will serve to improve operational flow, increase throughput, and reduce the level of service deficiencies within the project limits. In addition, the improvement of operational performance in the area should improve safety. The various improvements proposed by PI 332890 will directly address the operational and safety need shown in this area.

Estimate Report for file "332890 Concept Estimate_2010-04-06"

Section Road

Item Number	Quantity	Units	Unit Price	Item Description	Cost
109-0100	1	Lump Sum	71091.05	PRICE ADJUSTMENT - UNLEADED FUEL	71091.05
109-0200	1	Lump Sum	236118.8	PRICE ADJUSTMENT - DIESEL FUEL	236118.8
109-0300	1	Lump Sum	546109.75	FUEL PRICE ADJUSTMENT - ASPHALT CEMENT	546109.75
150-1000	1	LS	500000.0	TRAFFIC CONTROL -	500000.0
153-1300	1	EA	64089.88	FIELD ENGINEERS OFFICE TP 3	64089.88
201-1500	1	LS	200000.0	CLEARING & GRUBBING -	200000.0
205-0001	24000	CY	2.96	UNCLASS EXCAV	71040.0
206-0002	45500	CY	3.79	BORROW EXCAV, INCL MATL	172445.0
207-0203	65	CY	36.74	FOUND BKFILL MATL, TP II	2388.1
310-5100	25500	SY	13.39	GR AGGR BASE CRS, 10 INCH, INCL MATL	341445.0
310-5120	20000	SY	13.24	GR AGGR BASE CRS, 12 INCH, INCL MATL	264800.0
318-3000	500	TN	16.89	AGGR SURF CRS	8445.0
402-1812	5850	TN	59.21	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	346378.5
402-3112	2150	TN	80.0	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	172000.0
402-3113	4610	TN	80.0	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	368800.0
402-3143	5600	TN	85.0	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL	476000.0
413-1000	2500	GL	1.73	BITUM TACK COAT	4325.0
433-1300	861	SY	200.85	REINF CONC APPROACH SLAB, INCL BARRIER	172931.85
439-0026	11480	SY	63.76	PLAIN PC CONC PVMT, CL 3 CONC, 12 INCH THK	731964.79
441-0016	775	SY	36.25	DRIVEWAY CONCRETE, 6 IN TK	28093.75
441-0018	2050	SY	34.54	DRIVEWAY CONCRETE, 8 IN TK	70807.0
441-0104	3800	SY	23.64	CONC SIDEWALK, 4 IN	89832.0
441-0204	1400	SY	24.72	PLAIN CONC DITCH PAVING, 4 IN	34608.0
441-0748	4575	SY	29.05	CONCRETE MEDIAN, 6 IN	132903.75
441-4020	320	SY	35.26	CONC VALLEY GUTTER, 6 IN	11283.19
441-4030	100	SY	37.32	CONC VALLEY GUTTER, 8 IN	3732.0
441-6022	10300	LF	11.58	CONC CURB & GUTTER, 6 IN X 30 IN, TP 2	119274.0
441-6720	5200	LF	21.0	CONC CURB & GUTTER, 6 IN X 30 IN, TP 7	109200.0
500-3101	77	CY	363.58	CLASS A CONCRETE	27995.66
500-9999	200	CY	157.93	CLASS B CONC, BASE OR PVMT WIDENING	31586.0
511-1000	7930	LB	0.6	BAR REINF STEEL	4758.0
550-1180	7800	LF	29.13	STORM DRAIN PIPE, 18 IN, H 1-10	227214.0
550-1240	200	LF	35.46	STORM DRAIN PIPE, 24 IN, H 1-10	7092.0
550-1480	100	LF	75.83	STORM DRAIN PIPE, 48 IN, H 1-10	7583.0
550-2180	144	LF	21.68	SIDE DRAIN PIPE, 18 IN, H 1-10	3121.92
550-2240	101	LF	28.11	SIDE DRAIN PIPE, 24 IN, H 1-10	2839.11
550-3618	2	EA	542.27	SAFETY END SECTION 18 IN, SIDE DRAIN, 6:1 SLOPE	1084.54
550-4218	5	EA	445.27	FLARED END SECTION 18 IN, STORM DRAIN	2226.35
550-4224	3	EA	551.46	FLARED END SECTION 24 IN, STORM DRAIN	1654.38
550-4248	1	EA	1687.56	FLARED END SECTION 48 IN, STORM DRAIN	1687.56
573-2004	200	LF	18.96	UNDDR PIPE INCL DRAINAGE AGGR, 4 IN	3792.0
576-1015	170	LF	26.89	SLOPE DRAIN PIPE, 15 IN	4571.3
634-1200	64	EA	85.4	RIGHT OF WAY MARKERS	5465.6
641-1100	130	LF	41.3	GUARDRAIL, TP T	5369.0
641-1200	2200	LF	14.56	GUARDRAIL, TP W	32032.0
641-5001	6	EA	632.59	GUARDRAIL ANCHORAGE, TP 1	3795.54
641-5012	6	EA	2225.99	GUARDRAIL ANCHORAGE, TP 12	13355.93
668-1100	65	EA	2117.93	CATCH BASIN, GP 1	137665.44
668-2200	5	EA	2143.82	DROP INLET, GP 2	10719.1
668-4300	4	EA	1965.96	STORM SEWER MANHOLE, TP 1	7863.84
				Section Sub Total:	**$5,893,578.72**

Section Erosion Control

Item Number	Quantity	Units	Unit Price	Item Description	Cost

162-1300	100	EA	172.12	EROSION CONTROL CHECK DAM, TP -	17212.0
163-0232	30	AC	291.16	TEMPORARY GRASSING	8734.80
163-0300	2	EA	932.66	CONSTRUCTION EXIT	1865.32
163-0503	13	EA	368.6	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	4791.8
163-0520	25	LF	12.43	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	310.75
163-0550	70	EA	145.08	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	10155.6
165-0010	10000	LF	0.43	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	4300.0
165-0030	2000	LF	0.63	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	1260.0
165-0040	100	EA	86.87	MAINTENANCE OF EROSION CONTROL CHECKDAMS/DITCH CHECKS	8687.0
165-0087	13	EA	99.23	MAINTENANCE OF SILT CONTROL GATE, TP 3	1289.99
165-0101	2	EA	432.2	MAINTENANCE OF CONSTRUCTION EXIT	864.4
165-0105	70	EA	52.5	MAINTENANCE OF INLET SEDIMENT TRAP	3675.0
167-1000	4	EA	409.97	WATER QUALITY MONITORING AND SAMPLING	1639.88
167-1500	24	MO	508.17	WATER QUALITY INSPECTIONS	12196.08
171-0010	20000	LF	1.31	TEMPORARY SILT FENCE, TYPE A	26200.0
171-0030	4000	LF	2.65	TEMPORARY SILT FENCE, TYPE C	10600.0
700-6910	30	AC	667.95	PERMANENT GRASSING	20038.5
				Section Sub Total:	**$133,821.12**

Section Signing and Marking

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1032	2000	SF	19.23	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING TP 6	38460.0
636-2020	300	LF	19.98	GALV STEEL POSTS, TP 2	5994.0
636-5100	2	EA	186.89	MILEPOST SIGNS	373.78
643-0105	2500	LF	4.11	FIELD FENCE BARBED WIRE, 5 STRANDS	10275.0
653-0120	40	EA	68.7	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	2748.0
653-0170	2	EA	98.07	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	196.14
653-1501	5800	LF	0.31	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	1798.0
653-1502	1200	LF	0.33	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	396.0
653-1704	450	LF	3.59	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	1615.5
653-3501	6400	GLF	0.22	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	1408.0
653-6004	560	SY	2.55	THERMOPLASTIC TRAF STRIPING, WHITE	1428.0
653-6006	1000	SY	2.65	THERMOPLASTIC TRAF STRIPING, YELLOW	2650.0
657-1054	660	LF	3.94	PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, WHITE, TP PB	2600.4
657-3054	850	GLF	2.36	PREFORMED PLASTIC SKIP PVMT MKG, 5 IN, WHITE, TP PB	2006.0
				Section Sub Total:	**$71,948.82**

Section Signals

Item Number	Quantity	Units	Unit Price	Item Description	Cost
647-1000	2	LS	44306.58	TRAFFIC SIGNAL INSTALLATION NO -	88613.16
687-1000	2	LS	15906.55	TRAFFIC SIGNAL TIMING -	31813.1
				Section Sub Total:	**$120,426.26**

Section Bridge

Item Number	Quantity	Units	Unit Price	Item Description	Cost
543-9000	1	Lump Sum	2611500.0	CONST OF BRIDGE COMPLETE - SR3/US19	2611500.0
543-9000	1	Lump Sum	633662.0	CONST OF BRIDGE COMPLETE - POPLAR	633662.0
				Section Sub Total:	**$3,245,162.00**

Total Estimated Cost: $9,464,936.92

Subtotal Construction Cost	**$9,464,936.92**
E&C Rate 5.0 %	$473,246.85
Inflation Rate 0.0 % @ 0 Years	$0.00
Total Construction Cost	**$9,938,183.77**
Right Of Way	0.00
ReImb. Utilities	0.00
Grand Total Project Cost	**$9,938,183.77**

Date 3/15/2010

P.I. Number 332890 County Spalding

Project Number NH000-0001-04(062)

Special Provision, Section 109-Measurement and Payment

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX)*

ENTER FPL DIESEL	2.814
ENTER FPM DIESEL	6.332

ENTER FPL UNLEADED	2.647
ENTER FPM UNLEADED	5.95575

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

INCREASE ADJUSTMENT
125.00%

INCREASE ADJUSTMENT
125.00%

ROADWAY ITEMS	QUANTITY	DIESEL FACTOR	GALLONS DIESEL	UNLEADED FACTOR	GALLONS UNLEADED	REMARKS
Excavations paid as specified by Sections 205 **(CUBIC YARD)**	24000.000	0.29	6960.00	0.15	3600.00	
Excavations paid as specified by Sections 206 **(CUBIC YARD)**	45500.000	0.29	13195.00	0.15	6825.00	
GAB paid as specified by the ton under Section 310 **(TON)**		0.29		0.24		paid by SY not TN in this project
Hot Mix Asphalt paid as specified by the ton under Sections 400 **(TON)**		2.90		0.71		
Hot Mix Asphalt paid as specified by the ton under Sections 402 **(TON)**	18210.000	2.90	52809.00	0.71	12929.10	
PCC Pavement paid as specified by the square yard under Section 430 **(SY)**		0.25		0.20		PCC is under 439 for this project

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Bridge Excavation (CY) Section 211				8.00		1.50		prelim bridge design only; no quantities
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Concrete Handrail (LF) Section 500				8.00		1.50		
Concrete Barrier (LF) Section 500				8.00		1.50		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS

Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		prelim bridge design only; no quantities
Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Bar Reinf Steel (LB) Section 511				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		

SUM QF DIESEL=	**72964.00**	**SUM QF UNLEADED=**	**23354.10**

DIESEL PRICE ADJUSTMENT($)	**$236,118.80**
UNLEADED PRICE ADJUSTMENT($)	**$71,091.05**

ASPHALT CEMENT PRICE ADJUSTMENT
(BITUMINOUS TACK COAT 125% MAX)

APPLICABLE TO CONTRACTS/PROJECTS CONTAINING THE 413 SPECIFICATION, SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL	494	ENTER APM	1111.5

125.00%	INCREASE ADJUSTMENT

L.I.N.	TYPE	TACK (GALLONS)	TACK (TONS)	REMARKS
413-1000		2500	10.7378	

TMT = 10.7378

PRICE ADJUSTMENT($)	$6,365.34

400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX

ENTER APL	494	ENTER APM	1111.5

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

125.00%	INCREASE ADJUSTMENT

L.I.N. / Spec Number	MIX TYPE	HMA	JMF AC%	AC	REMARKS
402-1812	19 mm SP	5850	5.00	292.50	
4020-3112	19 mm SP	2150	5.00	107.50	
402-3113	12.5 mm SP	4610	5.00	230.50	
402-3143	25 mm SP	5600	5.00	280.00	
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			TMT =	910.50	

PRICE ADJUSTMENT($)	$539,744.40

ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)

APPLICABLE TO CONTRACTS CONTAINING THE 413 SPEC. SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 450 ENTER APM 1012.5

125.00%	INCREASE ADJUSTMENT

Use this side for Asphalt Emulsion Only

L.I.N.	TYPE	ASPHALT EMULSION (GALLONS)

TMT =

REMARKS:

Use this side for Asphalt Cement Only

L.I.N.	TYPE	TACK (GALLONS)

TMT =

REMARKS:

MONTHLY PRICE ADJUSTMENT($)	

ADJUSTMENT SUMMARY

FUEL PRICE ADJUSTMENT *(ENGLISH 125% MAX)*

DIESEL PRICE ADJUSTMENT($)	$236,118.80
UNLEADED PRICE ADJUSTMENT($)	$71,091.05
ASPHALT CEMENT PRICE ADJUSTMENT (BITUMINOUS TACK COAT 125% MAX)	$6,365.34
400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX	$539,744.40
ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)	

REMARKS:

TOTAL ADJUSTMENTS	$853,319.59

DWM 10/08

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: LaShone Alexander

Date: February 24, 2010
Project: NH-001-4(62)Spalding
Existing/Required R/W: Varies/Varies
Project Termini : SR 3/US 19 Turn Lanes @ SR 16
Project Description: SR 3 @ SR 16

P.I. Number: 332890
No. Parcels: 28

Land:	Commercial R/W: 131,065.558 sf @ $ 5.25/sf	$ 688,094	
	Commercial Esmt: 44,693.38sf. @ $ 5.25/sf @ 50%	117,320	
	Residential R/W: 52,685.809 sf @ $ 1.50 sf	79,028	
	Resdential Esmt: 1335.98sf. @ $1.50/sf @ 50%	1002	
			$ 885,444
Improvements : house, fencing, misc. site improvements			225,000
Relocation:	Commercial (0)		
	Residential (1)		40,000
Damage :	Proximity(4)		
	Consequential		
	Cost to Cure		60,000
	Net Cost		$ 1,210,444

Net Cost		$ 1, 210,444
Scheduling Contingency	55 %	665,744
Adm/Court Cost	60 %	1,125,713
		$ 3,001,901

Total Cost $3,001,950

Note: The Market Appreciation (40%) is not included in the updated Preliminary Cost Estimate.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE **NH-001-04(62), Spalding County, P.I. # 332890**
SR-3/US 19 Turn Lanes @ SR-16 in Griffin

OFFICE Thomaston

DATE September 3, 2009

FROM Kerry Gore, District Utilities Engineer

TO Jeremy Busby, Project Manager

SUBJECT **PRELIMINARY UTILITY COST (ESTIMATE)**

As requested by your office, we are furnishing you with a Preliminary Utility Cost estimate for each utility with facilities potentially located within the project limits.

FACILITY OWNER	NON-REIMBURSABLE	REIMBURSABLE
Atlanta Gas Light	26,250	0
BellSouth d/b/a AT&T Georgia	31,500	15,750
Central Georgia EMC	0	35,000
City of Griffin (Electric)	39,375	0
City of Griffin (Water/Sewer)	39,375	52,500
Comcast	21,000	0
Spalding County Water	25,200	0
TOTALS	**$182,700**	**$103,250**
30% Utilities Contingency		$30,975
Total Reimbursement Cost		**$134,225**

Total Preliminary Utility Cost Estimate **$316,925**.

If you have any questions, please contact Kerry Gore at 706-646-6692.

KG/pls

cc: Jeff Baker, P.E., State Utilities Engineer *(via: e-mail)*
Angela Whitworth, Office of Financial Management *(via: e-mail)*
Mark Sanford, Area Engineer *(via: e-mail)*

3/15/2010 5:27:43 PM Plot FTP
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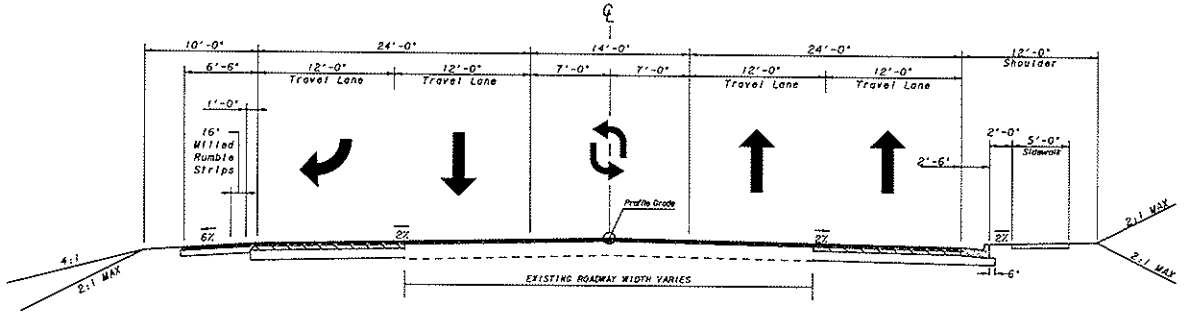
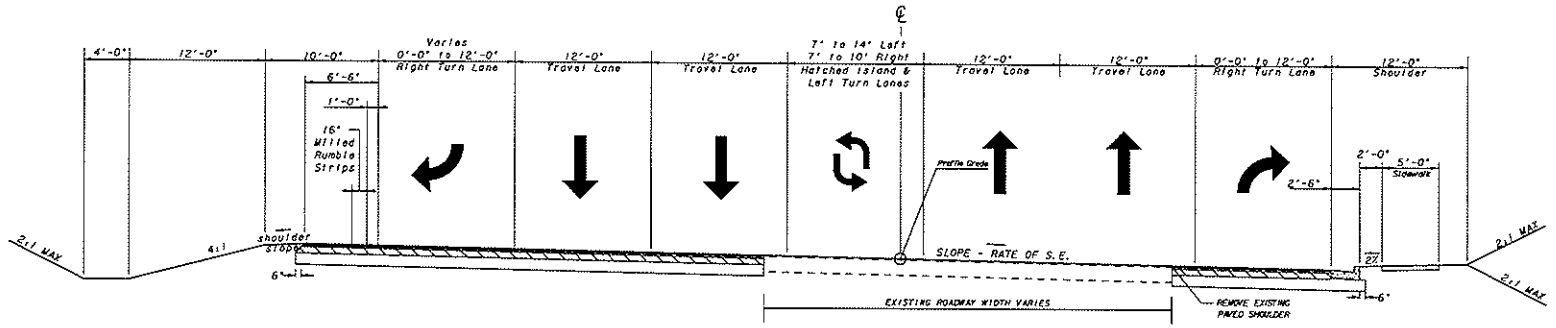
STATE GA | PROJECT NUMBER NH-001-4168() | SHEET NO. | TOTAL SHEETS



SR 16 - TYPICAL SECTION #1
TANGENT SECTION
TRANSITION FROM EXISTING RURAL 3-LANE
TO HYBRID MULTI-LANE SECTION



SR 16 - TYPICAL SECTION #2
SUPER ELEVATED SECTION
HYBRID MULTI-LANE SECTION

Columbia Engineering
2763 Meadow Church Road, Suite 100
Duluth, GA 30097-4989
Phone: (770) 925-0357
Fax: (770) 925-0565

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: OFFICE OF PROGRAM DELIVERY

TYPICAL SECTIONS

SR 3/US 19 TURN LANES
AT SR 16
SPALDING COUNTY

DRAWING No. 5-01

3/15/2010 5:27:51 PM USER:tsankar	Plot File C:\GDOT\GDOTROAD\tables\Gdotborder.tbl	P:\2854.00-GDOT\2 - Engineering\2.C.-Microstation\2.C.2-concept\33289DTYPS-PICH.dgn	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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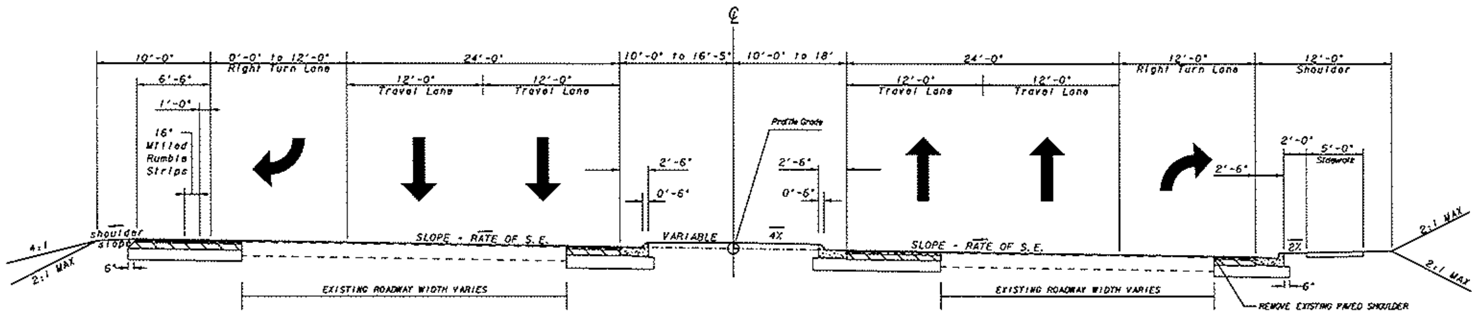
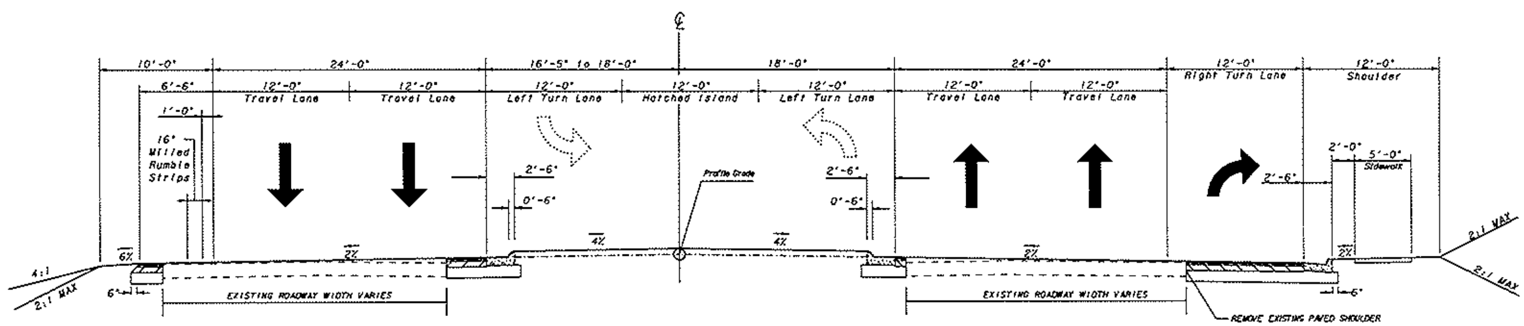


SR 16 - TYPICAL SECTION #3
SUPER ELEVATED SECTION
HYBRID MULTI-LANE SECTION
WITH RAISED MEDIAN



SR 16 - TYPICAL SECTION #4
TANGENT SECTION
HYBRID MULTI-LANE SECTION
WITH RAISED MEDIAN

Columbia Engineering
2763 Meadow Church Road, Suite 100
Duluth, GA 30097-4989
Phone: (770) 925-0357
Fax: (770) 925-0565

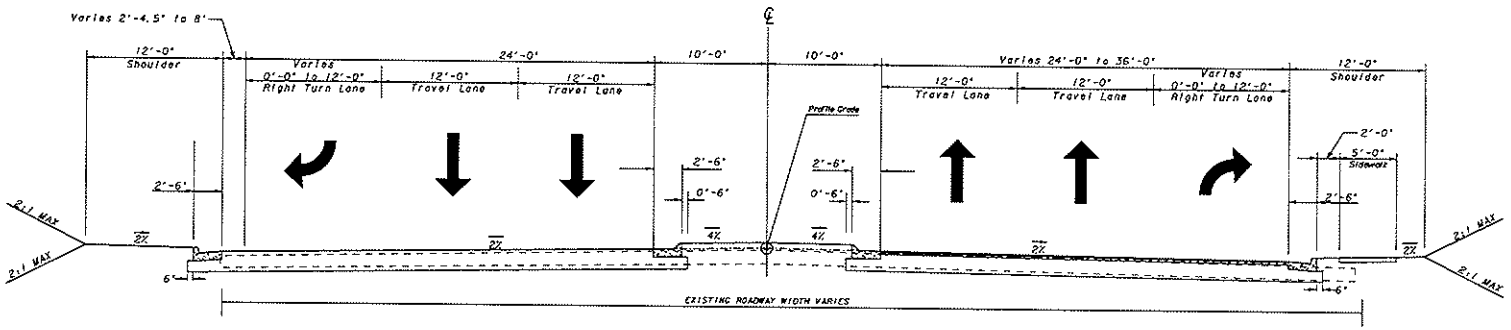
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: OFFICE OF PROGRAM DELIVERY

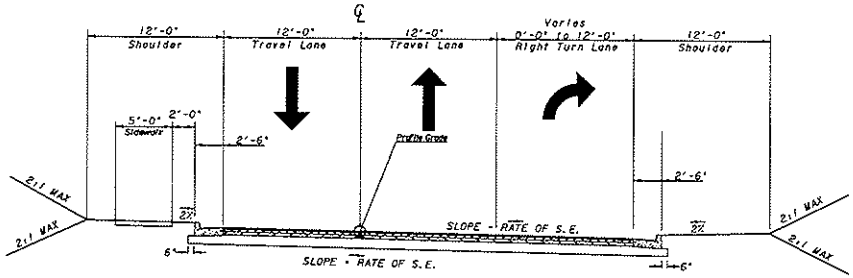
TYPICAL SECTIONS

SR 3/US 19 TURN LANES
AT SR 16
SPALDING COUNTY

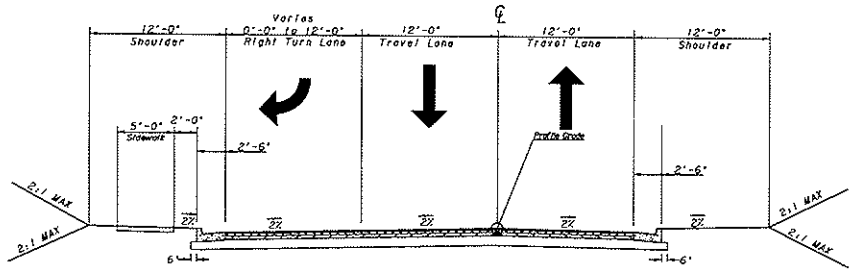
DRAWING No. 5-02



SR 16 - TYPICAL SECTION *5
TANGENT SECTION
URBAN 4-LANE SECTION WITH RAISED MEDIAN
TRANSITION TO EXISTING URBAN 4-LANE
SECTION WITH RAISED MEDIAN



CARVER ROAD - TYPICAL SECTION *6
SUPER ELEVATED SECTION



CARVER ROAD - TYPICAL SECTION *7
TANGENT SECTION

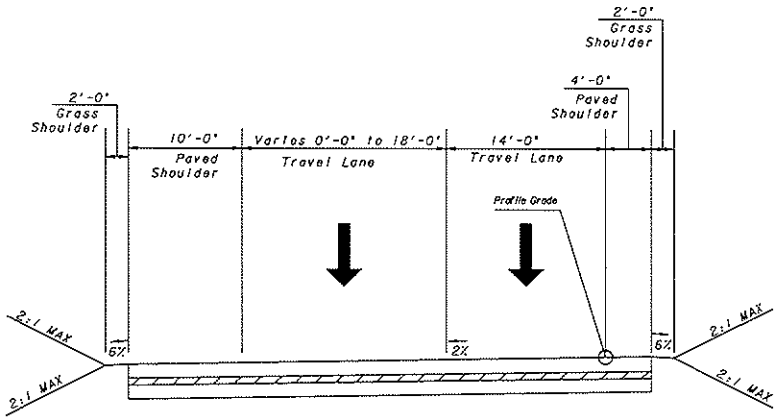
Columbia Engineering
2763 Meadow Church Road, Suite 100
Duluth, GA 30097-4989
Phone: (770) 925-0357
Fax: (770) 925-0565

REVISION DATES

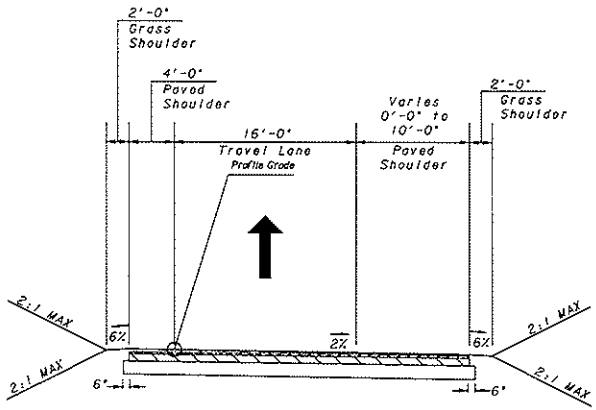
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: OFFICE OF PROGRAM DELIVERY

TYPICAL SECTIONS
SR 3/US 19 TURN LANES
AT SR 16
SPALDING COUNTY

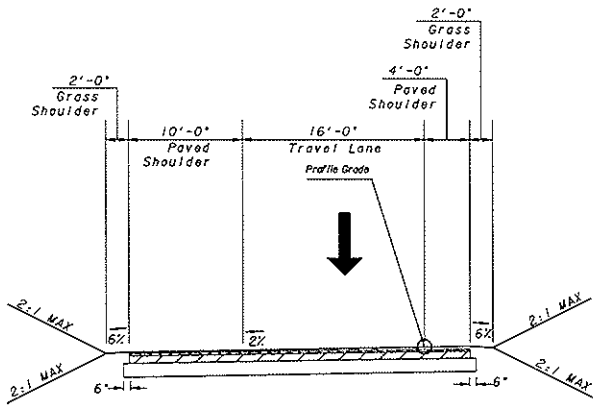
DRAWING NO. 5-03



TYPICAL SECTION #8
ENTRANCE RAMP
SR16 TO SR3(US19) SOUTHBOUND



TYPICAL SECTION #9
EXIT RAMP
SR3(US19) NORTHBOUND TO SR16



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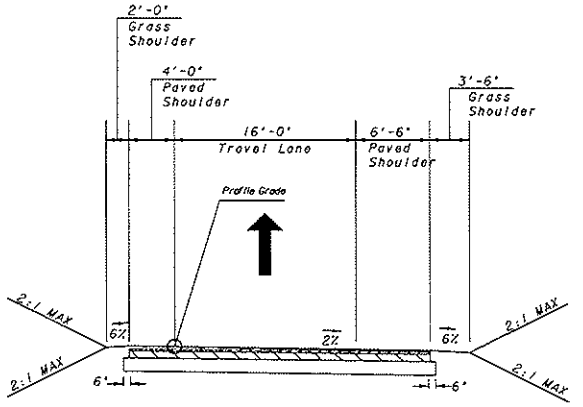
EXIT RAMP
SR3(US19) SOUTHBOUND TO SR16



TYPICAL SECTION #11
ENTRANCE RAMP
SR16 TO SR3(US19) NORTHBOUND

Columbia Engineering
2763 Meadow Church Road, Suite 100
Duluth, GA 30097-4989
Phone: (770) 925-0357
Fax: (770) 925-0565

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: OFFICE OF PROGRAM DELIVERY

TYPICAL SECTIONS

SR 3/US 19 TURN LANES
AT SR 16
SPALDING COUNTY

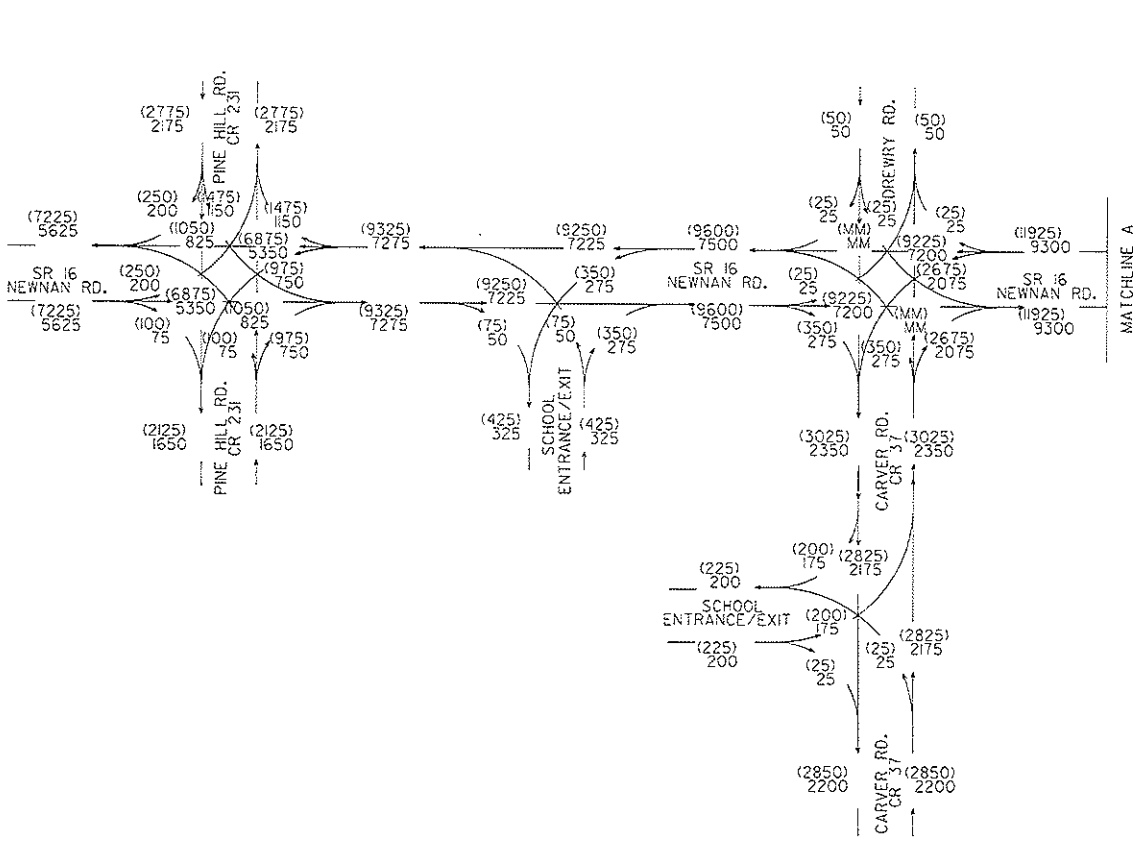
DRAWING No. 5-04

SHEET 1 OF 4

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

2015 ADT = 000
2035 ADT = (000)
24 HR. T = 8 %
S.U. = 5%
COMB. = 3%

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890
SPALDING COUNTY
SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

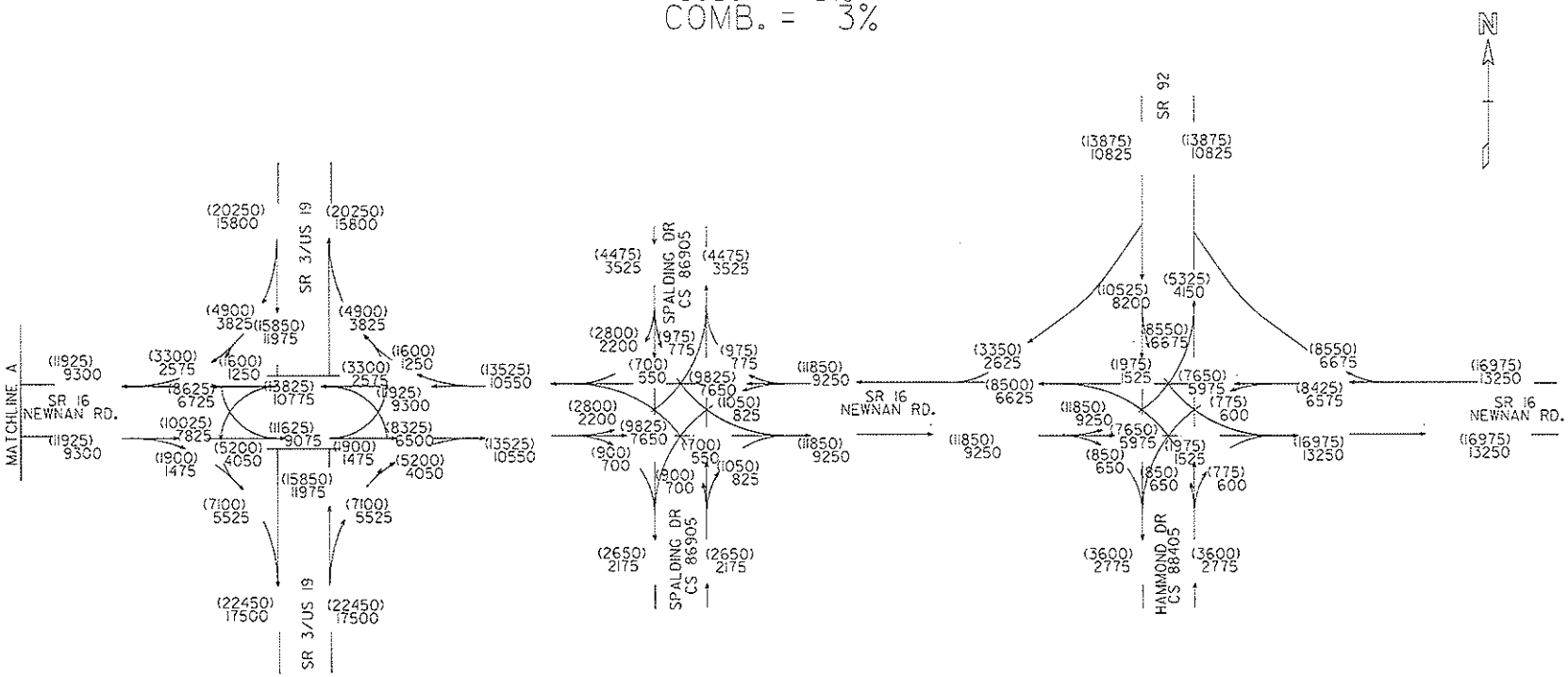
RFN
06/09

SHEET 2 OF 4

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

2015 ADT = 000
2035 ADT = (000)
24 HR. T = 8 %
S.U. = 5%
COMB. = 3%

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890

SPALDING COUNTY

SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

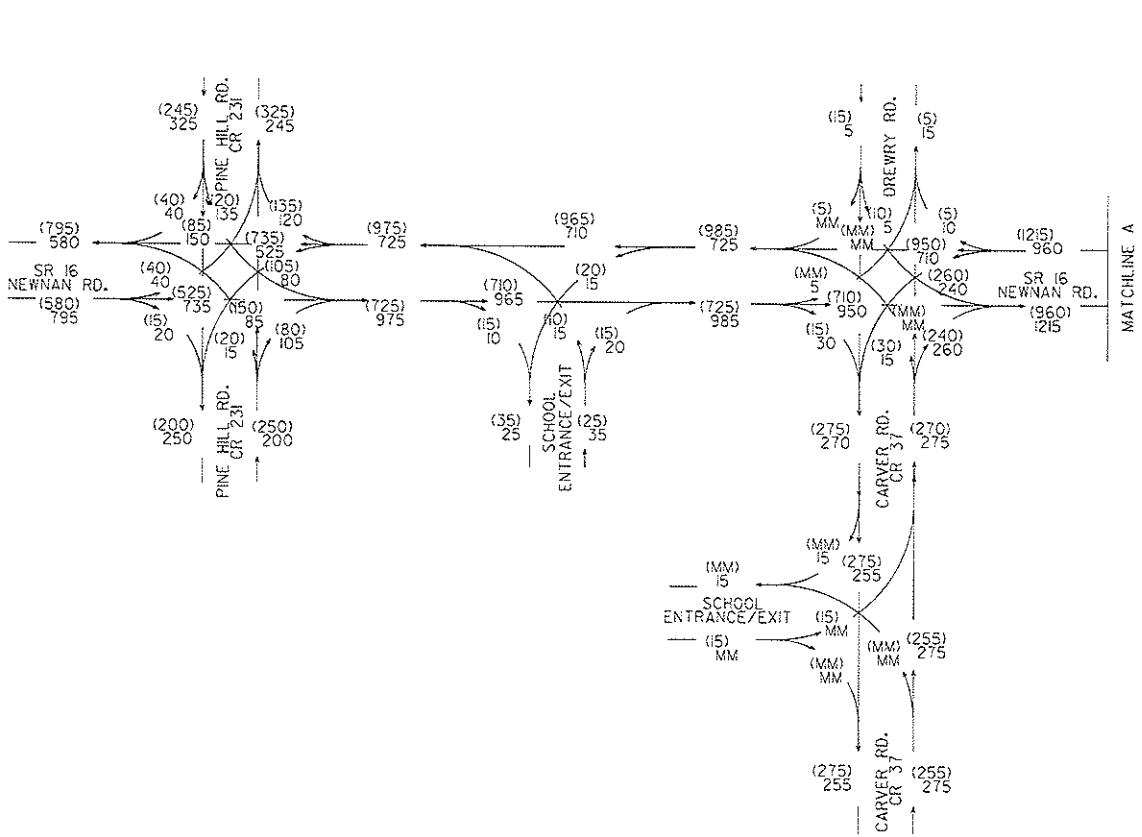
RFN
06/09

SHEET 3 OF 4

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

2035 AM DHV = 000
2035 PM DHV = (000)
T = 6%

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890
SPALDING COUNTY
SR 3/US19 TURN
LANES @ SR 16
IN GRIFFIN

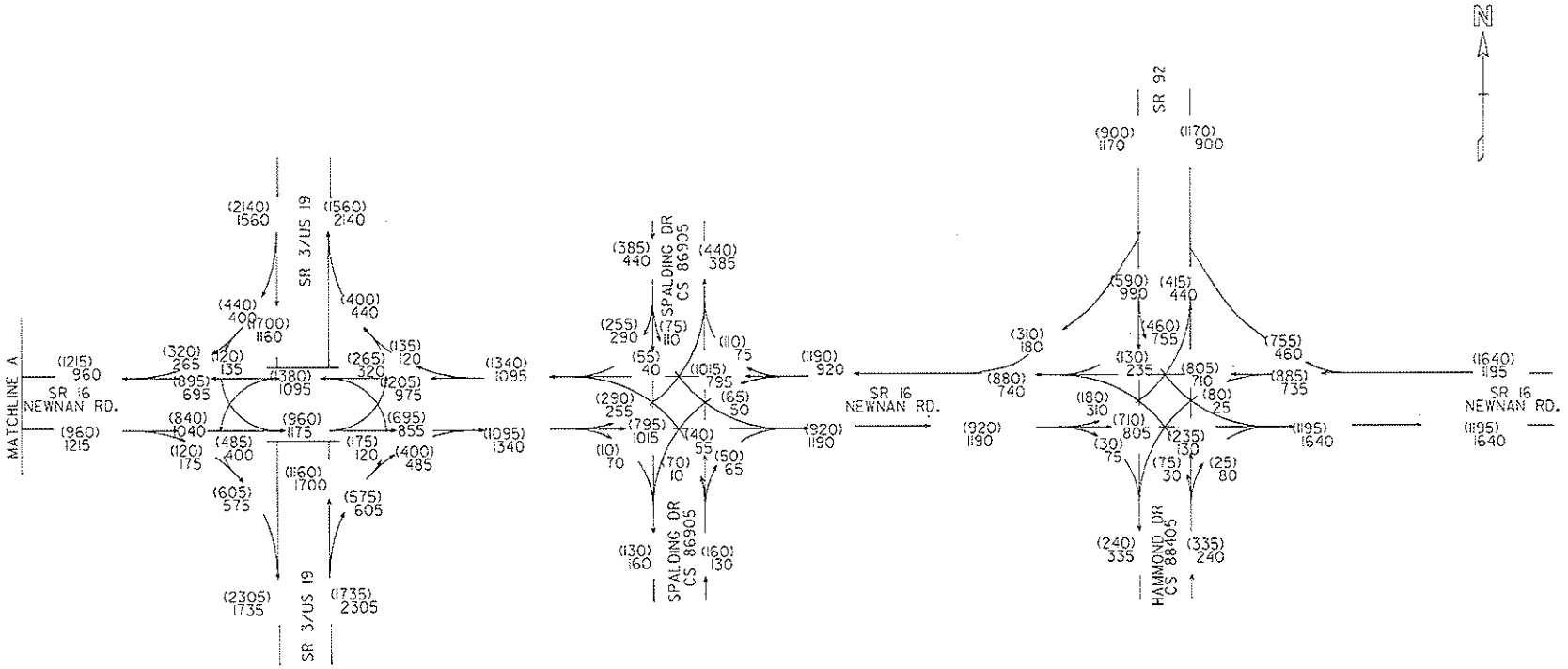
RFN
06/09

SHEET 4 OF 4

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

2035 AM DHV = 000
2035 PM DHV = (000)
T = 6%

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890
SPALDING COUNTY
SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

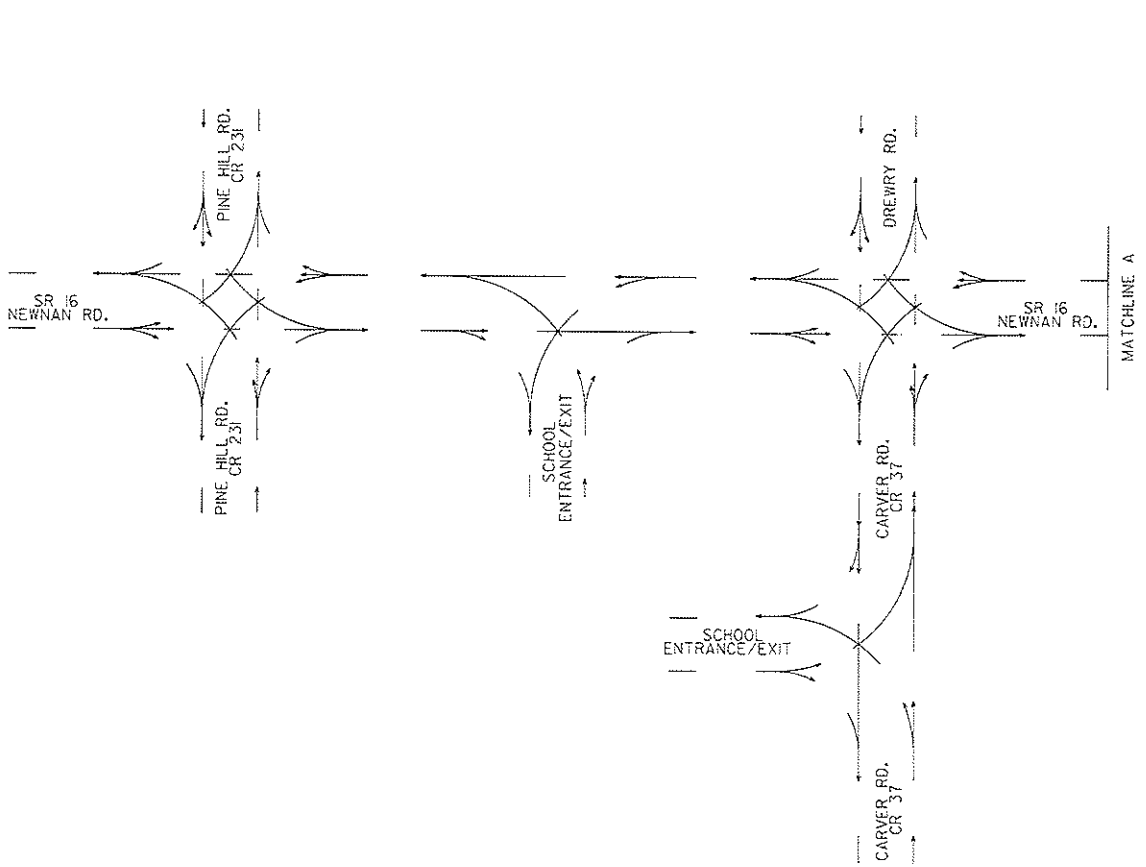
RFN
06/09

SHEET 1 OF 2

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

EXISTING 2009

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890
SPALDING COUNTY
SR 3/US19 TURN
LANES @ SR 16
IN GRIFFIN

EXISTING 2009

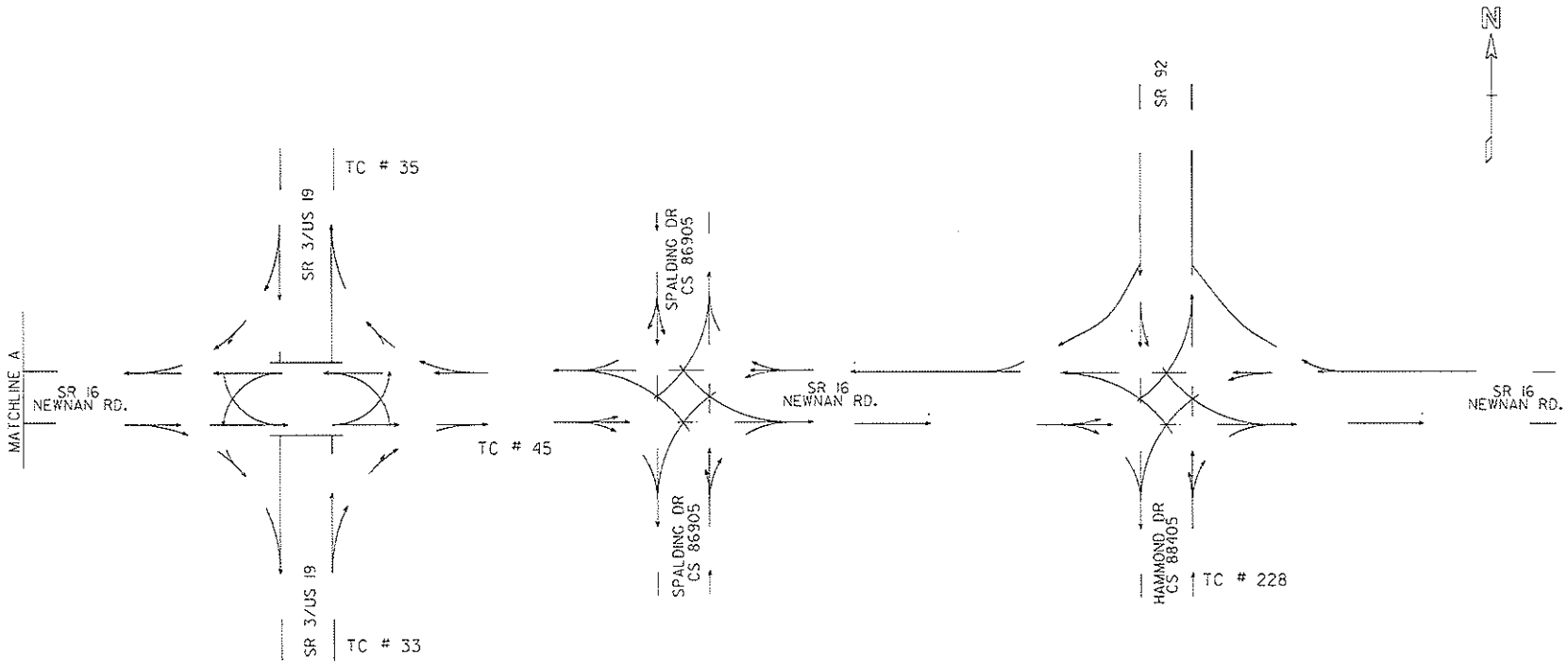
RFN
06/09

SHEET 2 OF 2

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

EXISTING 2009

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890
SPALDING COUNTY
SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

EXISTING 2009

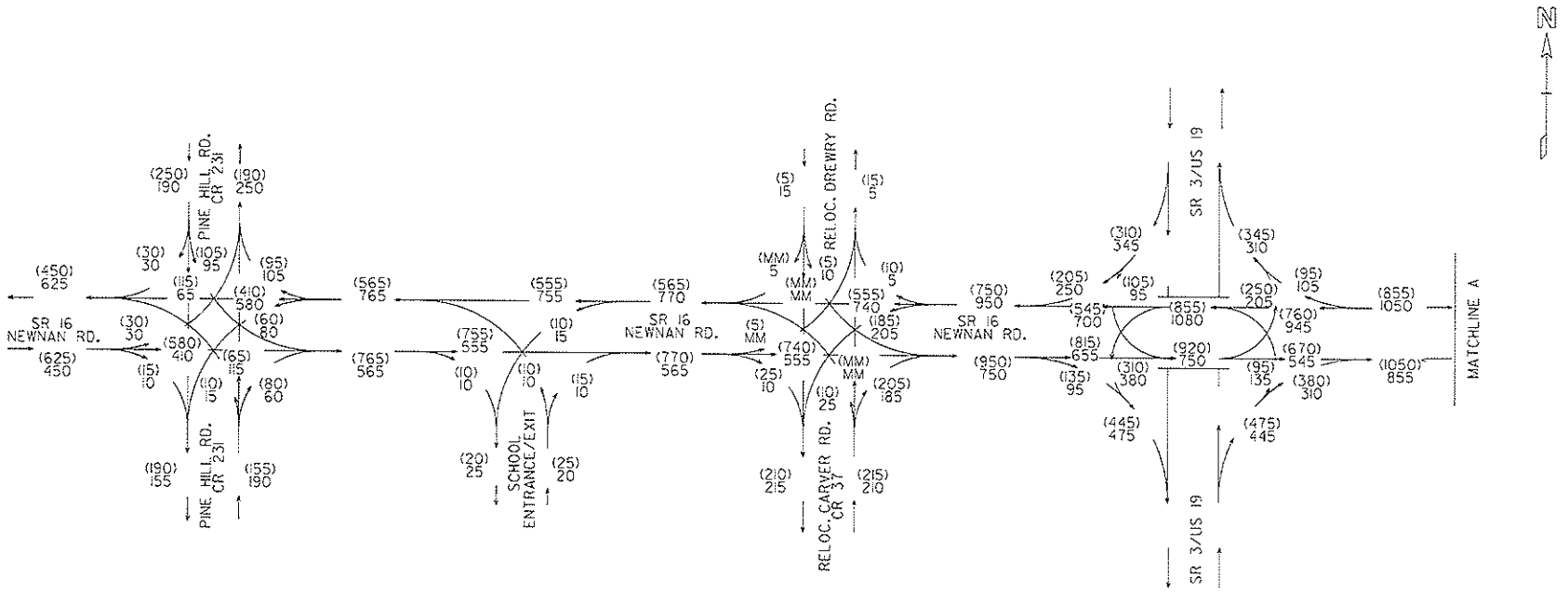
RFN
06/09

GEORGIA DEPARTMENT OF TRANSPORTATION

OFFICE OF ENVIRONMENT/LOCATION RFN 06/09

2015 AM DHV = (000)
2015 PM DHV = 000
T = 8 %

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890

SPALDING COUNTY

SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

MODIFIED BY SSI #362-11, 10/09/2009

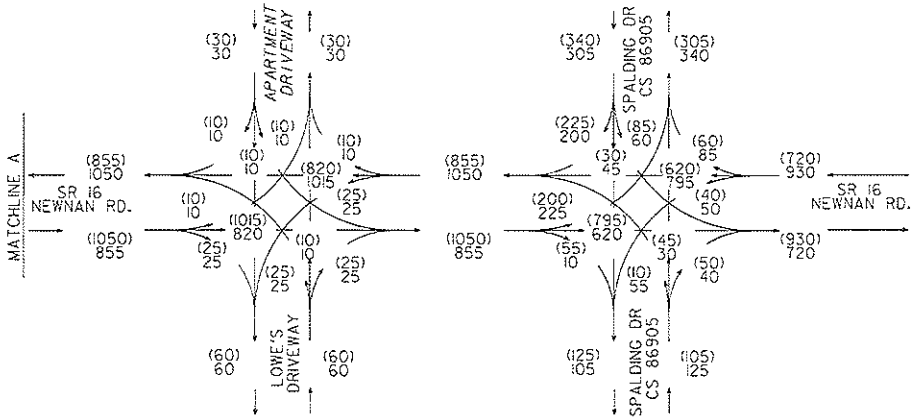
GEORGIA DEPARTMENT OF TRANSPORTATION

OFFICE OF ENVIRONMENT/LOCATION

RFN 06/09

2015 AM DHV = (000)
2015 PM DHV = 000
T = 8 %

SPALDING COUNTY



NH-001-4(62)
P.I. # 332890

SPALDING COUNTY

SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

MODIFIED BY
SSI #362-11, 10/09/2009

GEORGIA DEPARTMENT OF TRANSPORTATION

OFFICE OF ENVIRONMENT/LOCATION RFK 06/09

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2035 PM DHV= 000
T = 6%

SPALDING COUNTY

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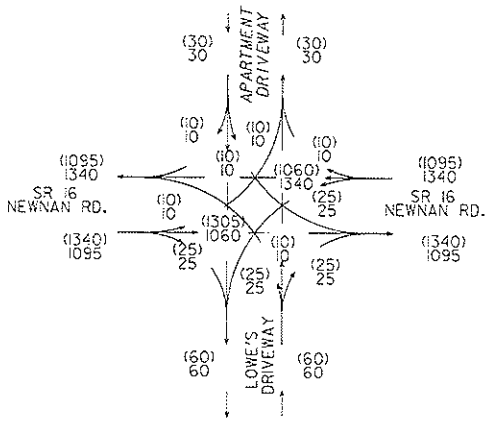


NH-001-4(62)
P.I. # 332890

SPALDING COUNTY

SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

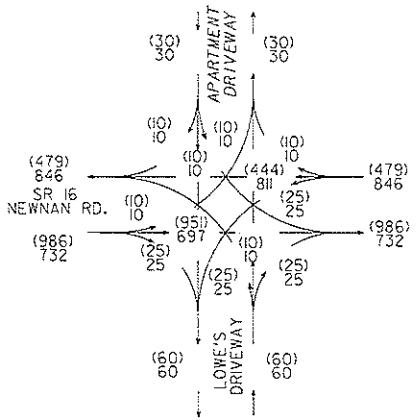
MODIFIED BY SSI #362-H, 10/09/2009

GEORGIA DEPARTMENT OF TRANSPORTATION

OFFICE OF ENVIRONMENT/LOCATION

SPALDING COUNTY

2009 EXISTING
AM PEAK HOUR = (000)
PM PEAK HOUR = 000
T = 6 %



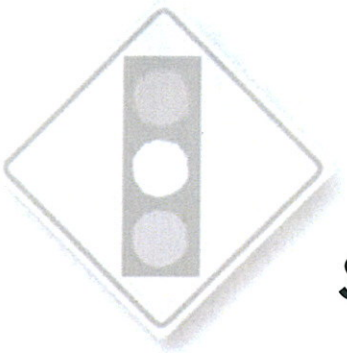
N

NH-001-4(62)
P.I. # 332890

SPALDING COUNTY

SR 3/US19 TURN LANES @ SR 16 IN GRIFFIN

MODIFIED BY SSI #362-11, 1/15/2010



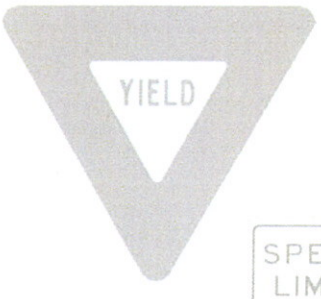
TRAFFIC CONCEPT STUDY

for

SR 16 INTERCHANGES AT US 19/41

(P.I. No. 332890)

Spalding County, Georgia



Prepared for:
Georgia Department of Transportation
With:
Columbia Engineering

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EXECUTIVE SUMMARY

This report summarizes the results of a traffic concept study conducted for SR 16 between Pine Hill Road and Spalding Drive, including the interchange at US 19/41. The study area is located near the western border of the City of Griffin, GA in Spalding County.

The purpose of this study was to determine the required roadway configuration for the planned improvement to the US 19/41 ramps intersections. To accommodate these improvements, SR 16 will require widening. Installation of a new parallel bridge is proposed to provide sufficient width to provide for an additional westbound through lane. Sufficient width for future dual left-turn lanes onto the US 19/41 southbound ramps will also be provided. The US 19/41 southbound on-ramp will be widened to receive vehicles from the possible dual left turn lanes. In addition, an eastbound left-turn lane from SR 16 onto the northbound on-ramp to US 19/41 will be provided and the SR 16 pavement markings will be modified to allow free right turns from the northbound US 19/41 exit ramp. The second westbound through lane will continue to Pine Hill Road with a flush median. The opening year for this project is 2015. Design year (2035) traffic volumes were used to determine future operational needs. The following tasks were performed:

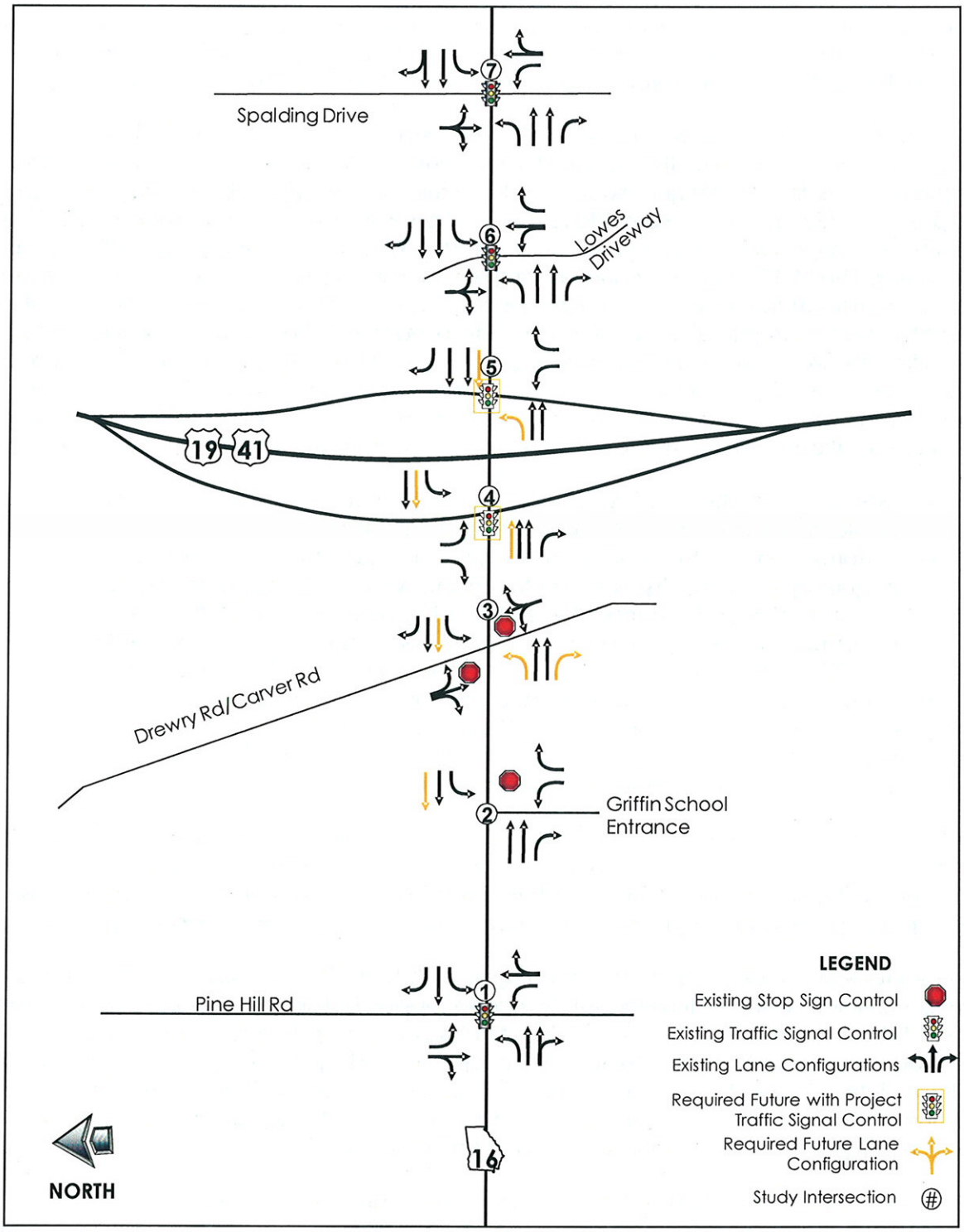
- Developed existing and 2015 peak hour traffic volumes at the intersections on SR 16 between Pine Hill Road and Spalding Drive;
- Performed accident analysis of the study corridor to determine that the frequency and severity of vehicular crashes were higher than reported on similar roadways throughout the state for the years 2005 to 2008;
- Performed capacity analyses for the study intersections, for existing conditions, opening year 2015 volumes, and design year 2035 volumes; and
- Performed traffic signal warrant analyses for the intersections of SR 16 and Carver Road, SR 16 and US 19/41 SB Ramps and SR 16 and US 19/41 NB Ramps to determine if opening year 2015 volumes are likely to warrant installation of traffic signals at these intersections.

The capacity analyses for the No Build conditions show that the intersections of SR 16 with the US 19/41 ramps will operate inadequately for both 2015 and 2035 peak hour traffic volumes. With the build conditions, all intersections are expected to operate adequately in the opening year and design year. Future Controls and Lane Configurations Figure follows.

The signal warrant analyses for the opening year 2015 traffic volumes indicate that there will be sufficient volumes throughout the day to support installation of traffic signals at the US 19/41 ramps intersections with SR 16. Analyses for these two locations indicate that roundabouts would not be expected to operate adequately in the opening year. Although the Carver Road approaches to SR 16 are not expected to operate adequately during peak hours, it is not expected that the volumes throughout the day would be sufficient by 2015 to support installation of a traffic signal.

The minimum full-width turning lane lengths required are also provided.

Future Controls and Lane Configurations



1. INTRODUCTION

This report summarizes the results of a traffic concept study conducted for SR 16 between Pine Hill Road and Spalding Drive, including the interchange at US 19/41. The study area is located near the western border of the City of Griffin, GA in Spalding County.

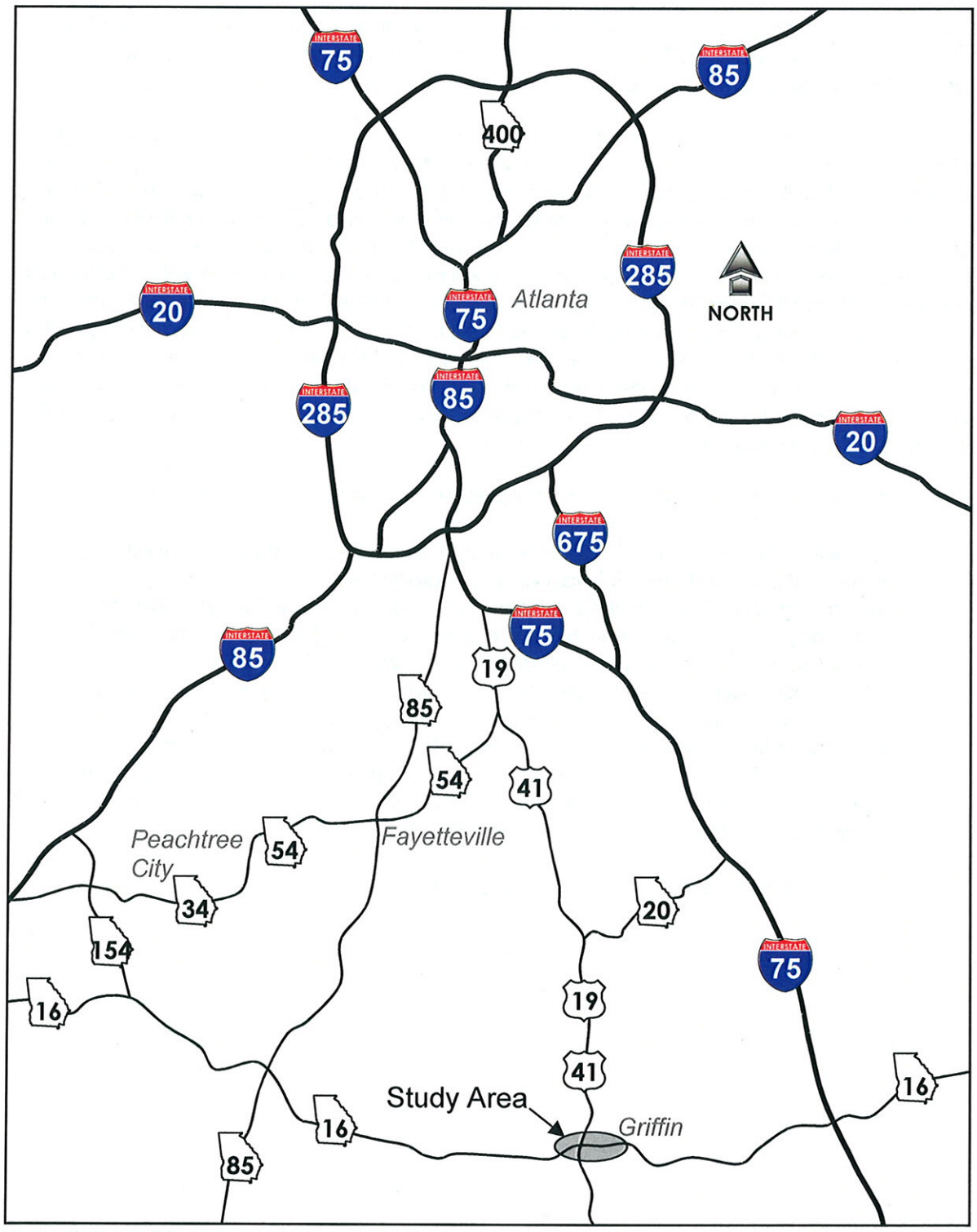
The purpose of this study was to determine the required roadway configuration for the planned improvement to the US 19/41 ramps intersections. To accommodate these improvements, SR 16 will require widening. Installation of a new parallel bridge is proposed to provide sufficient width to provide for an additional westbound through lane. Sufficient width for future dual left-turn lanes onto the US 19/41 southbound ramps will also be provided. The US 19/41 southbound on-ramp will be widened to receive vehicles from the possible dual left turn lanes. In addition, an eastbound left-turn lane from SR 16 onto the northbound on-ramp to US 19/41 will be provided and the SR 16 pavement markings will be modified to allow free right turns from the northbound US 19/41 exit ramp. The second westbound through lane will continue to Pine Hill Road with a flush median. The opening year for this project is 2015. Design year (2035) traffic volumes will be used to determine future operational needs.

The scope and methodology used in this evaluation includes the following elements:

- Developing existing and 2015 peak hour traffic volumes at the intersections on SR 16 between Pine Hill Road and Spalding Drive;
- Performing accident analysis of the study corridor to determine that the frequency and severity of vehicular crashes were higher than reported on similar roadways throughout the state for the years 2005 to 2008;
- Performing capacity analyses for the study intersections, for existing conditions, opening year 2015 volumes, and design year 2035 volumes; and
- Performing traffic signal warrant analyses for the intersections of SR 16 and Carver Road, SR 16 and US 19/41 SB Ramps and SR 16 and US 19/41 NB Ramps to determine if opening year 2015 volumes are likely to warrant installation of traffic signals at these intersections.

The location of the study area is shown in Figure 1.

Figure 1. Site Location



Study Intersections

The following intersections were evaluated for operational efficiency and peak hour vehicular capacity for the years 2015, and 2035:

1. SR 16 at Pine Hill Road;
2. SR 16 at School Entrance/Exit;
3. SR 16 at Carver Road;
4. SR 16 at US 19 SB Ramps;
5. SR 16 at US 19 NB Ramps;
6. SR 16 at the Lowe's Driveway; and
7. SR 16 at Spalding Drive.

Roadway Inventory

The physical and traffic control elements of the roadways were observed to be as follows:

- **Newnan Road/ West Taylor Street (SR 16)** is a four-lane divided roadway with a 45 mph posted speed limit within the vicinity of the study area. It serves as a Major Arterial, and is capable of carrying regional traffic east to Sparta and west through Newnan and into Carrollton. The land uses along SR 16 in the study area include retail, commercial and office.

- **Pine Hill Road** is a two lane undivided roadway running primarily north to south. It carries local traffic serving residential and agricultural land uses.

- **Carver Road/Drewry Road** is a two lane undivided roadway running primarily north to south, with termini 1/3 mile north and 2.5 miles south of its intersection with SR 16. Carver Road serves mostly residential and agricultural land uses.

- **US 19/41** is a four-lane limited access highway with a 55 mph posted speed limit in the vicinity of the study area. This road has many names along its path from I-75 to the north through the study area, including Tara Boulevard, Herman Talmadge Highway, Martin Luther King, Jr. Parkway and Express Way. This major north-south arterial connects I-75, near Morrow, through Jonesboro and on to Griffin before splitting into US 19 and US 41 just south of its interchange with SR 16.

- **Spalding Drive** is a two-lane roadway, which runs north-south for approximately ½ mile. It serves several schools including Orrs School, Spalding County Junior High School and Griffin Technical Institute north of SR 16. It also serves as an additional access driveway for the Lowe's parking lot, south of SR 16.

Collision Analysis

Records of vehicular crashes reported on SR 16 during 2005 to 2008 were provided by the Georgia Department of Transportation Office of Traffic Safety and Design. The statewide accident rates for a non-National Highway System (NHS) Urban Minor Arterial were also obtained from Georgia Department of Transportation for the years 2005, 2006, 2007 and 2008 (the latest yearly statewide crash rates available).

Using the average of the daily traffic on SR 16 volumes provided by the 24-hour counts collected for this study, the overall collision rates were established per 100 million vehicle miles (MVM) and compared to the statewide rates for similar roadways. Table 1 shows the collisions rates comparison.

Table 1. Collision Rates Comparison

	Statewide				Study Corridor			
Collisions per 100 MVM	**2005**	**2006**	**2007**	**2008**	**2005**	**2006**	**2007**	**2008***
Injury Involved Collisions	140	137	126	117	409	473	183	352
Collisions Involving Fatalities	1.54	1.43	1.36	1.33	0	0	0	0
Total Collisions	554	548	513	469	723	567	687	687

*2008 data may be incomplete

As shown in Table 1, the frequency and the severity (as indicated by the injury rates) of the crashes in the study area, appears to be higher than the statewide rate during 2005, 2006, 2007 and 2008. The intersection collision diagrams of the crash data provided are shown in the Appendix.

Table 2 summarizes the number of crashes on the corridor by year.

Table 2. Number of Collisions for 2005-2008

	Study Corridor			
Number of Collisions	**2005**	**2006**	**2007**	**2008***
Total Injuries	26	30	12	21
Collisions Involving Fatalities	0	0	0	0
Total Collisions	46	36	45	41

*2008 data may be incomplete

Existing Traffic Volumes

For the purpose of peak hour capacity analyses, peak period turning movement counts were taken at the intersections of SR 16 at Pine Hill Road, SR 16 at Carver Road, and SR 16 at Spalding Drive on 15 April 2009. On 27 February 2007, counts were collected at SR 16 and the Lowe's Driveway. The AM and PM peak hour turning movement counts at the study intersections are shown in the Appendix. The existing lane configurations and traffic control for the study intersections are illustrated in Figure 2.

Twenty-four hour tube counts were collected at the following locations on 15-16 April 2009:

- SR 16 West of Pine Hill Rd
- Pine Hill Rd North of SR 16
- Pine Hill Rd South of SR 16
- SR 16 East of Pine Hill Rd
- SR 16 West of School Entrance/Exit
- School Entrance/Exit
- SR 16 East of School Entrance/Exit
- Carver Rd North of SR 16
- Carver Rd South of SR 16
- SR 16 West of US 19/41
- US 19/41 North of SR 16 (SB and NB)
- US 19/41 South of SR 16 (SB and NB)
- US 19/41 SB Off-Ramp to SR 16
- US 19/41 NB On-Ramp from SR 16
- US 19/41 SB On-Ramp from SR 16
- US 19/41 NB Off-Ramp to SR 16
- SR 16 between US 19/41 Ramps
- SR 16 East of US 19/41
- Spalding Dr North of SR 16
- Spalding Dr South of SR 16
- SR 16 East of Spalding Dr

The results of these counts were used to perform signal warrant analyses. See Section Traffic Signal Warrant Analysis.

The 2009 peak hour vehicular operations at the study intersections and along the roadway corridor were evaluated for existing conditions. Tables 3 and 4 show the intersection and roadway corridor Levels of Service with no improvements to the study corridor.

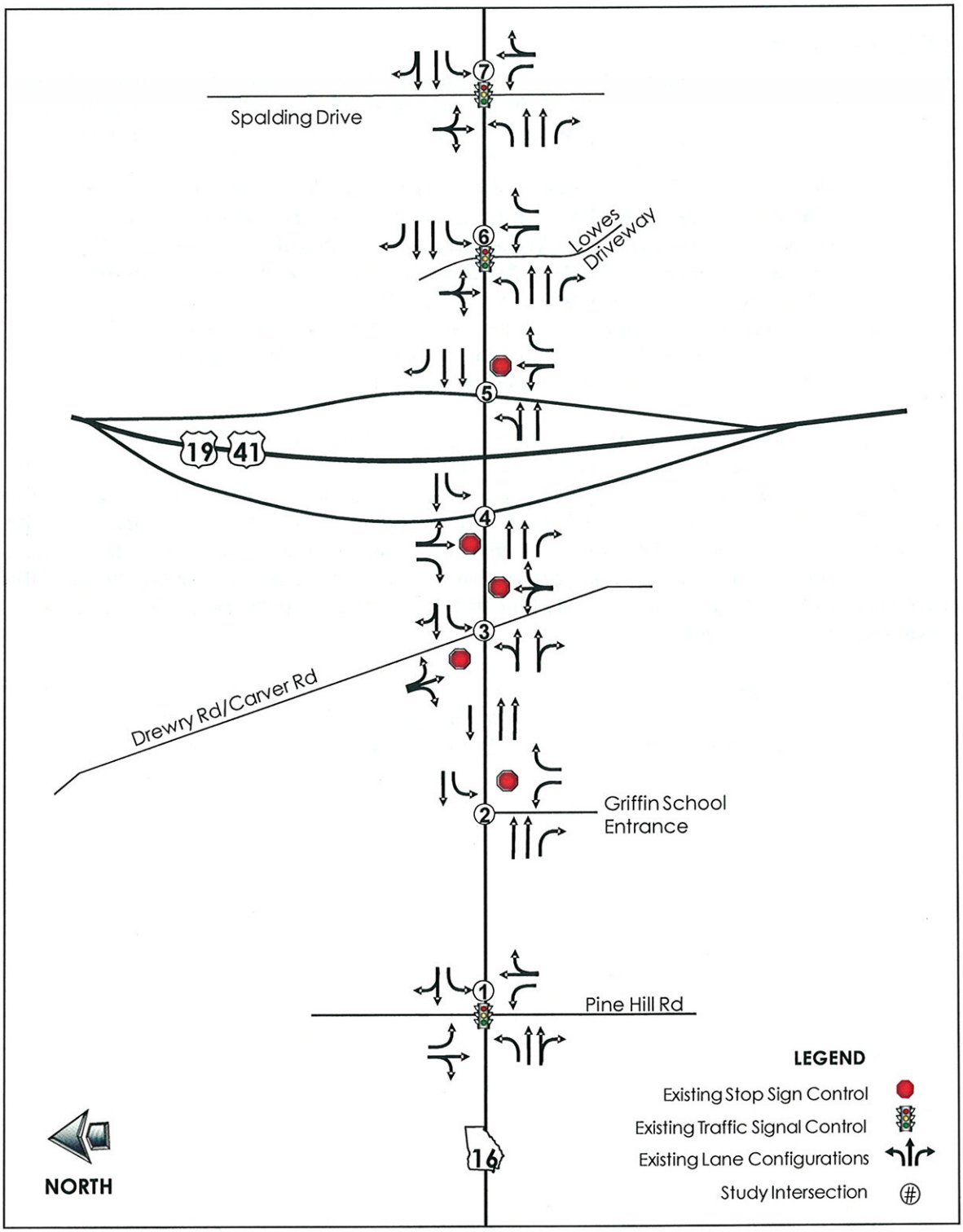
Table 3. Existing Intersection Levels of Service

ID	Intersection	Control	Approach/ Movement	Weekday LOS 2009	
				AM	PM
1	SR 16 at Pine Hill Rd	Signal	Overall	C	C
2	SR 16 at School Entrance/Exit	Side Street STOP	NB	D	C
			EB	A	A
			WB	B	A
3	SR 16 at Carver	Side Street STOP	NB	D	C
			SB	B	D
			EB	A	A
			WB	B	A
4	SR 16 at SB Ramps	Side Street STOP	SB	D	F
			EB	A	A
			WB	A	A
5	SR 16 at NB Ramps	Side Street STOP	NB	F	F
			EB	A	A
			WB	A	A
6	SR 16 at Lowe's Driveway	Signal	Overall	B	A
7	SR 16 at Spalding Drive	Signal	Overall	C	B

Table 4. Existing Roadway Levels of Service

Roadway Segment	Direction	Weekday LOS 2009	
		AM	PM
SR 16 west of Pine Hill Rd	Overall	B	C
SR 16 between Pine Hill Rd and the School	Overall	C	C
SR 16 between the School and Carver Rd	Overall	C	C
SR 16 between Carver Rd and US 19/41 ramps	Overall	D	D
SR 16 between US 19/41 NB and SB ramps	Overall	D	D
SR 16 east of US 19/41 ramps	Eastbound	A	A
	Westbound	B	A
SR 16 east of Spalding Dr	Eastbound	A	A
	Westbound	A	A
Drewry Rd north of SR 16	Overall	A	A
Carver Rd south of SR 16	Overall	A	A

Figure 2. Existing Lane Configurations and Traffic Controls



Traffic Projections

Between the time this study is performed and opening year (2015), the traffic volumes on the adjacent roadways are expected to increase further. This growth is called background traffic growth. There are generally two components to background traffic growth:

(a) growth close to the subject site due to specific identified projects already in the "pipeline" (that is, actual nearby projects already approved, or further along in the approval process, that can reasonably be expected to be built by build-out of the subject site), sometimes called "background development"; and
(b) general traffic growth along major roadways due to the expanding nature of the region, and to other non-specific development further from the site, often simply referred to as "background growth".

The daily and design hour volumes were developed by the Georgia Department of Transportation for the design year (2035). The daily opening year (2015) volumes were also prepared by GDOT. The 2015 daily volumes were reduced by a factor to determine the 2015 design hour volumes. At the School Entrance/Exit and the Lowe's Driveway, the turning movements into and out of these driveways were not grown between the existing and the opening year or the design year because it was assumed that the school and the Lowe's development were at capacity for existing conditions. Traffic projections are shown in figures in the Appendix.

The 2015 and 2035 peak hour vehicular operations at the study intersections and along the roadway corridor were evaluated for both build and no-build scenarios. Table 5 shows the projected Intersections Levels of Service with no improvements to the study corridor.

Table 5. Levels of Service for No-Build Scenario

ID	Intersection	Control	Approach/ Movement	Weekday LOS			
				2015		2035	
				AM	PM	AM	PM
1	SR 16 at Pine Hill Rd	Signal	Overall	C	B	D	C
2	SR 16 at School Entrance/Exit	Side Street STOP	NB	E	C	F	E
			EB	A	A	A	A
			WB	B	A	B	A
3	SR 16 at Carver	Side Street STOP	NB	D	C	F	E
			SB	F	E	F	F
			EB	A	A	A	A
			WB	B	B	C	B
4	SR 16 at SB Ramps	Side Street STOP	SB	F	F	F	F
			EB	A	A	A	A
			WB	C	B	F	D
5	SR 16 at NB Ramps	Side Street STOP	NB	F	F	F	F
			EB	B	A	C	C
			WB	A	A	A	A
6	SR 16 at Lowe's Driveway	Signal	Overall	A	A	B	A
7	SR 16 at Spalding Drive	Signal	Overall	B	B	C	C

As seen in Table 5, the US 19/41 northbound and southbound ramps' approaches to SR 16 are not expected to operate adequately for the during the weekday peak periods in both the opening year and the design year. In addition, the westbound SR 16 approach to the US 19/41 southbound ramp intersection is not expected to operate adequately during morning weekday peak periods by the design year.

The new lane configuration is proposed to include an eastbound SR 16 dedicated left turn lane onto the northbound US 19/41 ramp and dual westbound SR 16 through lanes at the southbound US 19/41 ramps intersection that would continue to Pine Hill Road. The analysis also included the addition of signals at the intersections of SR 16 and the US 19/41 northbound and southbound ramps to provide adequate weekday peak period LOS in the design year. . The intersection and roadway corridor Levels of Service for the improved configuration are shown in Tables 6 and 7.

Table 6. Build Intersection Levels of Service

ID	Intersection	Control	Movement	Weekday LOS			
				2015		2035	
				AM	PM	AM	PM
1	SR 16 at Pine Hill	Signal	Overall	B	C	C	B
2	SR 16 at School Entrance/Exit	Side Street STOP	NB	C	B	C	B
			EB	A	A	A	A
			WB	B	A	B	A
3	SR 16 at Carver	Side Street STOP	NB	C	C	F	E
			SB	F	E	F	F
			EB	A	A	A	A
			WB	B	B	C	B
4	SR 16 at SB Ramps	Signal	Overall	B	B	B	C
5	SR 16 at NB Ramps	Signal	Overall	A	A	A	A
6	SR 16 at Lowe's	Signal	Overall	A	A	B	A
7	SR 16 at Spalding	Signal	Overall	B	B	C	C

Table 7. Build Roadway Levels of Service

Roadway Segment	Direction	Weekday LOS			
		2015		2035	
		AM	PM	AM	PM
SR 16 west of Pine Hill Rd	Overall	C	C	D	D
SR 16 between Pine Hill Rd and Carver Rd	Eastbound	A	A	B	A
	Westbound	A	A	A	B
SR 16 between Carver Rd and US 19/41 ramps	Eastbound	B	A	B	B
	Westbound	A	B	B	B
SR 16 between US 19/41 NB and SB ramps	Eastbound	B	A	B	B
	Westbound	B	B	B	B
SR 16 east of US 19/41 ramps	Eastbound	B	A	B	B
	Westbound	A	B	B	B
SR 16 east of Spalding Dr	Eastbound	B	A	B	B
	Westbound	A	B	B	B

The analysis shows that all of the signalized intersections and all of the SR 16 roadway segments will operate at adequate Levels of Service for year 2015 and 2035. Due to the increasing through traffic volumes on SR 16 in the opening and design years, the side street approaches of Carver Road and Drewry Road are expected to operate at inadequate Levels of Service during the weekday peak hours with the existing side-street stop-sign controls. The side-street left-turning traffic volumes are insufficient to meet minimum signal warrant volumes, even during the peak hours.

Turn bay storage lengths analyses were also performed for the study intersections. The minimum GDOT left turn storage bay and right turn deceleration bay lengths were compared to the greater of the number of vehicles expected to arrive within one and one half traffic signal cycles multiplied by 25 feet each or the 95th percentile queue length provided by the Synchro analysis for the 2035 volumes. Table 8 shows the minimum turn bay storage lengths for SR 16 approaches to the study intersections.

Table 8: Turning Lane Lengths

#	Intersection	Movement	GDOT Minimum Required Full Width Turn Lane Length (ft)	Arrivals in 1½ signal cycles per lane (x 25 ft) Storage Length (ft)	2035 Peak Hr Synchro 95th Percentile Queue Length (ft)	Recommended Minimum Storage Length (ft)
1	SR 16 at Pine Hill Rd	WB Right	250	100	168*	250
		WB Left	250	75	168*	250
2	SR 16 at School Entrance/Exit	EB Right	175	25	Minimal	175
		WB Left	235	25	Minimal	235
3	SR 16 at Carver Rd	EB Right	250	25	Minimal	250
		EB Left	250	25	Minimal	250
		WB Right	250	25	40	250
		WB Left	250	225	40	250
4	SR 16 at US 19 SB Ramps	EB Right	250	150*	403*	450
		WB Left	250	350	380*	425
5	SR 16 at US 19 NB Ramps	EB Left	250	275*	201*	325
		WB Right	250	100	426*	475
6	SR 16 at Lowe's Driveway	EB Right	175	25	336	175
		EB Left	235	25	336	235
		WB Right	175	25	91*	175
		WB Left	235	25	91*	235
7	SR 16 at Spalding Dr	EB Left	250	225	234*	250
		EB Right	250	75*	234*	250

*Storage lengths are based on the longer of the turning or through queue for AM volumes

Based on the weekday peak period intersection capacity analyses, installation of traffic signals were identified as required to provide adequate operations for future traffic volumes at the intersections of SR 16 with the northbound and southbound US 19/41 ramps. Traffic Signal Warrant analyses using the standard Federal Highway Administration's *Manual on Uniform Traffic Control Devices, 2003 Edition,* (MUTCD) methodology.

Warrant Analysis

For the purpose of these analyses, 2015 hourly turning movement volumes were first used to determine if sufficient vehicular volumes would be likely to exist throughout the day to warrant installation of traffic signals. SR 16 is considered the main street for the analyses. Right turn volumes were not included for the analyses, based on the NCHRP 457 criteria. Reductions in the minimum volume requirements of 30% based on the 45 mph posted speed on SR 16 were not used for the analyses. The US 19/41 ramps left turning vehicular volumes were used as the minor (intersecting street) volumes with the bi-directional SR 16 through volumes for the initial analyses. For the 2015 volumes analysis of the southbound US 19/41 ramps intersection, the MUTCD specified option allowing the main street left turn volumes as the minor street volumes and the conflicting main street through volumes was used.

Tables 9-11 show the 2015 hourly volumes used for the Signal Warrant Analysis. These volumes were calculated based on the time of day distributions from the existing 2009 counts.

Warrant 1 - Eight-Hour Vehicular Volume

Warrant 1, Eight-Hour Vehicular Volume, has three (3) Conditions. The Conditions are based on the combined volume of both main street approaches and the side street approach with the higher volume.

Condition 1A, Minimum Vehicular Volume, "is intended for application where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal."

Condition 1B, Interruption of Continuous Traffic, "is intended for application where Condition 1A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street."

Table 9. Year 2015 Hourly Volumes – Carver Rd/Drewry Rd at SR 16

Hour Beginning	Carver Rd			Drewry Rd			SR 16					
	NB LT	NB THRU	NB RT	SB LT	SB THRU	SB RT	EB LT	EB THRU	EB RT	WB LT	WB THRU	WB RT
12:00 AM	1	0	12	0	0	0	0	42	1	12	40	0
1:00 AM	1	0	9	0	0	0	0	30	1	9	29	0
2:00 AM	0	0	4	0	0	0	0	15	0	4	15	0
3:00 AM	1	0	6	0	0	0	0	20	1	6	19	0
4:00 AM	1	0	12	0	0	0	0	39	1	11	38	0
5:00 AM	3	0	32	1	0	0	0	107	3	32	105	1
6:00 AM	7	0	74	1	0	0	1	251	7	74	244	2
7:00 AM	16	0	173	3	0	1	2	583	16	171	568	5
8:00 AM	12	0	137	2	0	1	1	464	13	136	452	4
9:00 AM	9	0	98	2	0	1	1	332	9	97	323	3
10:00 AM	10	0	115	2	0	1	1	387	10	114	377	3
11:00 AM	11	0	127	2	0	1	1	428	12	126	417	4
12:00 PM	12	0	138	2	0	1	1	467	13	137	455	4
1:00 PM	12	0	134	2	0	1	1	453	12	133	442	4
2:00 PM	12	0	132	2	0	1	1	444	12	131	433	4
3:00 PM	16	0	173	3	0	1	2	585	16	172	571	5
4:00 PM	15	0	170	3	0	1	2	573	16	168	559	5
5:00 PM	16	0	179	3	0	1	2	605	16	178	590	5
6:00 PM	13	0	145	3	0	1	1	489	13	144	477	4
7:00 PM	9	0	98	2	0	1	1	332	9	98	324	3
8:00 PM	7	0	78	1	0	0	1	264	7	78	257	2
9:00 PM	5	0	56	1	0	0	1	189	5	56	184	2
10:00 PM	3	0	34	1	0	0	0	114	3	33	111	1
11:00 PM	2	0	20	0	0	0	0	67	2	20	66	1

Table 10. Year 2015 Hourly Volumes – US 19/41 Southbound Ramps at SR 16

Hour Beginning	US 19/41 SB			SR 16					
	SB LT	SB THRU	SB RT	EB LT	EB THRU	EB RT	WB LT	WB THRU	WB RT
12:00 AM	7	0	15	0	46	7	22	39	0
1:00 AM	5	0	11	0	33	5	16	29	0
2:00 AM	2	0	5	0	16	3	8	14	0
3:00 AM	3	0	7	0	22	3	11	19	0
4:00 AM	6	0	14	0	43	7	21	37	0
5:00 AM	17	0	39	0	118	19	57	102	0
6:00 AM	40	0	92	0	277	43	133	238	0
7:00 AM	93	0	213	0	643	101	308	554	0
8:00 AM	74	0	170	0	512	80	245	441	0
9:00 AM	53	0	121	0	366	57	176	315	0
10:00 AM	62	0	142	0	427	67	205	368	0
11:00 AM	68	0	157	0	473	74	226	407	0
12:00 PM	75	0	171	0	516	81	247	444	0
1:00 PM	72	0	166	0	501	79	240	431	0
2:00 PM	71	0	163	0	491	77	235	423	0
3:00 PM	93	0	214	0	646	101	310	557	0
4:00 PM	91	0	210	0	633	99	303	545	0
5:00 PM	96	0	221	0	668	105	320	575	0
6:00 PM	78	0	179	0	540	85	259	465	0
7:00 PM	53	0	122	0	367	58	176	316	0
8:00 PM	42	0	97	0	291	46	140	251	0
9:00 PM	30	0	69	0	209	33	100	180	0
10:00 PM	18	0	42	0	126	20	60	108	0
11:00 PM	11	0	25	0	74	12	36	64	0

Table 11. Year 2015 Hourly Volumes – US 19/41 Northbound Ramps at SR 16

Hour Beginning	US 19/41 NB			SR 16					
	NB LT	NB THRU	NB RT	EB LT	EB THRU	EB RT	WB LT	WB THRU	WB RT
12:00 AM	8	0	24	14	38	0	0	54	6
1:00 AM	6	0	17	10	27	0	0	39	5
2:00 AM	3	0	8	5	13	0	0	19	2
3:00 AM	4	0	11	7	18	0	0	26	3
4:00 AM	7	0	22	13	35	0	0	51	6
5:00 AM	20	0	61	37	97	0	0	139	16
6:00 AM	48	0	143	86	227	0	0	325	38
7:00 AM	111	0	332	199	527	0	0	756	88
8:00 AM	88	0	264	158	420	0	0	601	70
9:00 AM	63	0	189	113	300	0	0	430	50
10:00 AM	73	0	220	132	350	0	0	502	59
11:00 AM	81	0	244	146	387	0	0	555	65
12:00 PM	89	0	266	160	423	0	0	606	71
1:00 PM	86	0	258	155	410	0	0	588	69
2:00 PM	84	0	253	152	402	0	0	577	67
3:00 PM	111	0	333	200	530	0	0	759	89
4:00 PM	109	0	326	196	518	0	0	743	87
5:00 PM	115	0	344	207	547	0	0	785	92
6:00 PM	93	0	278	167	443	0	0	634	74
7:00 PM	63	0	189	114	301	0	0	431	50
8:00 PM	50	0	150	90	239	0	0	342	40
9:00 PM	36	0	108	65	171	0	0	245	29
10:00 PM	22	0	65	39	103	0	0	148	17
11:00 PM	13	0	38	23	61	0	0	87	10

The Combination of Conditions 1A & 1B volumes "is intended for applications at locations where Condition 1A is not satisfied and Condition 1B is not satisfied." The Combination is met when 80% of Condition 1A is met for eight hours and 80% of Condition 1B is met for eight hours, however the eight hours satisfied for Condition 1A are not required to be the same eight hours satisfied for Condition 1B. At least one of these Conditions must be met for eight (8) hours to meet the warrant.

For Condition 1A, the main street must have a combined minimum volume of 600 vehicles and the minor street with the higher volume must have a minimum volume of at least 150 vehicles. For Condition 1B, the main street must have a combined minimum volume of 900 vehicles and the minor street with the higher volume must have a minimum volume of at least 75 vehicles. The results are shown in Table 12.

Table 12. Warrant 1 Results

Intersection	Warrant	Warrant Satisfied in 2015? (Hours Met)
SR 16 @ Carver Road	1A	No (0)
	1B	No (0)
	Combo	No (0)
SR 16 @ US 19/41 Southbound Ramps	1A	No (4)
	1B	No (0)
	Combo	No (0)
SR 16 @ US 19/41 Northbound Ramps	1A	No (0)
	1B	Yes (10)

As shown in Table 12, Warrant 1B is met only for the SR 16 at the Northbound Ramps intersection with 2015 volumes excluding right turns.

Warrant 2 - Four-Hour Vehicular Volume

Warrant 2, Four-Hour Vehicular Volume, is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal." Warrant 2 is based on the combined volume of both main street approaches and the side street approach with the higher volume. The volumes are compared to a curve based on the number of lanes on the approaches. Warrant 2 must be met for four hours to meet the warrant. The results are shown in Table 13.

Table 13. Warrant 2 Results

Intersection	Warrant	Warrant Satisfied? (Hours Met/Hours Required)
SR 16 @ Carver Road	2	No (0)
SR 16 @ US 19/41 SB Ramps	2	Yes (4)
SR 16 @ US 19/41 NB Ramps	2	Yes (5)

As shown in Table 13, Warrant 2 is met only for the Northbound and Southbound Ramps intersections in 2015.

Warrant 3 - Peak Hour

Warrant 3, Peak Hour, is "intended for use at a location where traffic conditions are such that for a minimum of one hour of an average weekday, the minor street traffic suffers undue delay when entering or crossing the major street. This signal warrant shall be applied only in unusual cases. Such unusual cases include, but are not limited to, office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time". Warrant 3 has two Conditions, at least one of which must be met to meet the Warrant.

Condition 3A is satisfied when the following three conditions exist for the same four consecutive 15-minute periods of an average weekday:

- the total stopped time delay experienced by traffic on the minor street approach (one direction only) controlled by a stop sign equals or exceeds four vehicle-hours for a one-lane approach or five vehicle-hours for a two lane approach;

- the volume on the same minor street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and

- the total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

Condition 3B is based on the combined volume of both the main street approaches and the side street approach with the higher volume. The volumes are compared to a curve based on the number of lanes on the approaches. The results are shown in Table 14.

Table 14. Warrant 3 Results

ID	Intersection	Warrant	Warrant Satisfied? (Hours Met)
			2015
1	SR 16 @ Carver Road	3A	No (0)
		3B	No (0)
2	SR 16 @ US 19/41 SB Ramps	3A	Yes-Volumes only(15)
		3B	No (0)
3	SR 16 @ US 19/41 NB Ramps	3A	Yes volumes only (4)
		3B	No (0)

Therefore, Warrant 3 may be met for the Ramps intersections if there is sufficient vehicular delay measured in the field after the improvements are made; however, these intersections do not meet the standard criteria to justify installation of a traffic signal for Warrant 3 conditions that are limited to application at unusual locations such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities.

Warrant 7 – Crash Experience

Warrant 7, Crash Experience Warrant, is intended where severity and frequency of crashes are considered for installation of a traffic signal. Warrant 7 has three criteria, all of which must be satisfied to meet the warrant.

- Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency
- Five or more crashes within a consecutive 12-month period involving personal injury or reportable property damage of types susceptible to correction by installation of a traffic signal
- For eight hours of an average day, the vehicles per hour (VPH) during each hour exceed 80% of the Warrant 1, either Condition A or B requirements for both major and minor street approaches during the same eight hours; or 80% of the Warrant 4, Pedestrian Volume requirements.

The intersection was evaluated using accident reports supplied by the Georgia Department of Transportation Office of Traffic Safety and Design for the years 2005-2007. The number of angle collisions for the three-year period can be seen in Table 15 and in more detail in the Appendix.

Table 15. Angle Crash Data

Intersection	Number of Angle Crashes			
	2005	*2006*	*2007*	2008
SR 16 @ Carver Road	*1*	*1*	1	1
SR 16 @ US 19/41 Ramps	*3*	*0*	0	0

Based on the existing volumes, none of the study intersections meet the criteria that the vehicles per hour (VPH) during each hour exceed 80% of the Warrant 1, Condition A and B requirements for both major and minor street approaches during the same eight hours. Therefore, Warrant 7, Crash Experience Warrant, is not met.

Warrants 4, 5, 6, and 8

Warrants 4 (Pedestrian Volume), 5 (School Crossing), 6 (Coordinated Signal System), and 8 (Roadway Network) were not deemed applicable according to the standards, and so they were not evaluated.

Protected Left-Turn Signal Phase Requirements

The Left-Turn Signal Conflict was also investigated. This is based upon criteria set forth in the *Highway Capacity Manual (HCM 2000)* published by the Transportation Research Board. The hourly left-turning volumes are compared to the conflicting through volumes. If, for at least one hour of the day, the left-turns multiplied by the conflicting through volume (and rights if applicable) equal 50,000 or more for one opposing through lane or 90,000 or more for two opposing through lanes, a protected left-turn phase is required.

The westbound left turn and conflicting eastbound through movement at the SR 16 and Carver Road and US 19/41 SB ramps intersections, and the eastbound left turn and westbound through movements at the SR 16 and US 19/41 intersection were evaluated with two opposing through lanes. The results are shown in Table 16.

Table 16. Left-Turn Signal Conflict

Intersection	Direction	Left Turn Phase Required?
SR 16 @ US 19/41 SB Ramps	WB LT	Yes
SR 16 @ US 19/41 NB Ramps	EB LT	Yes

As shown in Table 16, protected phases are required for the westbound left-turn on SR 16 at the SR 3/US 19/41 southbound ramps, as well as for the eastbound left-turn at the SR 3/US 19/41 northbound ramps by the year 2015.

A summary of the warrants analyzed is shown in Table 17. A more detailed breakdown of the analyses is provided in the Appendix.

Table 17. Summary of the Signal Warrant Evaluation

Warrant Number	Warrant Satisfied? (Hours Met/Hours Required)		
	SR 16 @ Carver Road	SR 16 @ US 19/41 SB Ramps	SR 16 @ US 19/41 NB Ramps
1A	No (0/8)	No (4/8)	No (0/8)
1B	No (0/8)	No (0/8)	Yes (10/8)
2	No (0/4)	Yes (4/4)	Yes (5/4)
3A volumes only	No (0/1)	Yes (15/1)	Yes (4/1)
3B	No (0/1)	No (0/1)	No (0/1)
7	No	No	No

Roundabout Capacity Analyses

The GDOT Roundabout Analysis Tool was used to determine that multi-lane roundabouts would create inadequate LOS on the eastbound and westbound SR 16 approaches to the intersections with the US 19/41 ramps with the 2015 projected peak hour volumes. The roundabout analyses worksheets are provided in the Appendix.

The end points for capacity adding projects must pass a threefold logical termini test which requires that they 1) not preclude consideration of alternatives for reasonably foreseeable projects, 2) constitute rational end points and allow for consideration of environmental matters on a broad scope, 3) and have independent utility.

Methodology

As with need and effectiveness, the primary indicators of logical termini were derived from LOS analysis; however, in this case, the analysis shifted from the project corridor to sections and intersections immediately beyond the termini.

Restriction of Alternatives for Reasonably Foreseeable Projects

A key concern under logical termini is whether the proposed project would restrict the consideration of alternatives for reasonably foreseeable projects, thereby posing a risk of adverse effects to environmental resources. For this reason, it is important that coordination take place to ensure that the alignment of a project would leave future adjoining or intersecting projects with sufficient flexibility to avoid or minimize impacts to environmental resources.

There are no programmed or planned projects in the vicinity of this project.

Rational End Points/Consideration of Environmental Matters on a Broad Scope

A second concern is whether a project has rational end points, defined as points beyond which further capacity improvements are not needed. Rational end points ensure not only that the expenditure of funds is justified but also that environmental matters are considered on a sufficiently broad scope. The key indicator of rational end points is no build LOS for the roadway segment and/or intersection immediately beyond the termini. Generally, LOS grades of A through C indicate that there is no need to continue improvements beyond the proposed termini. LOS grades of D, which indicate the presence of moderate capacity constraint, raise concern about the rationality of the termini. LOS grades of E or F beyond a terminus generally indicate that termini are not rational end points.

As noted, LOS D estimates raise uncertainty as to whether a terminus is logical. For this reason, when no build LOS is D for the segment and/or intersection beyond a terminus, the LOS estimate is compared and contrasted to the average no build LOS estimates for the corridor to determine whether the need for capacity improvements is relatively less beyond the terminus. In addition, if LOS is D beyond a terminus, average roadway speed and/or average intersection seconds of delay are examined to determine whether LOS is actually closer to C or E.

No build LOS estimates and existing typical sections for the intersection immediately beyond the two termini are displayed in Table 18. The intersection LOS is a C or better at both the eastern and western termini.

Table 18. Logical Termini Levels of Service For No Build Conditions

Intersection		Terminus	Control	Movement	Build Year		Design Year	
#	Name				AM	PM	AM	PM
1	SR 16 at Pine Hill Rd	Western	Signal	Overall	B	B	C	C
7	SR 16 at Spalding Dr	Eastern	Signal	Overall	B	B	D	D

Independent Utility

To have independent utility, a project must not generate traffic increases that create a need for improvements on other roadways. Also the project must not require the improvement of other roadways to be effective for addressing its stated need.

To determine whether the project would create a need for immediate improvements along other roadways, build and no build AADT estimates are first compared for adjoining and intersecting routes. If the project is shown to generate traffic increases on these routes (i.e., build AADT is greater than no build AADT), design year build and no build LOS is compared. If build LOS estimates are C or better for adjoining or intersecting routes, the project would not force needed improvements. If LOS breaks down from C or better under the no build condition to E or F under the build condition, improvements would be required and the project lacks independent utility. If build LOS is D, the quantitative determinants of LOS are analyzed to determine whether LOS more closely approaches C (stable traffic flow) or E (at capacity) and, by extension, whether the project is more or less likely to force immediate improvements on the route.

Table 19 displays the change in LOS generated by this project on adjoining or intersecting routes. As can be seen, both termini will operate adequately with the programmed improvements.

Table 19. Logical Termini Levels of Service For Build Conditions

Intersection		Terminus	Control	Movement	Build Year		Design Year	
#	Name				AM	PM	AM	PM
1	SR 16 at Pine Hill Rd	Western	Signal	Overall	B	C	C	B
7	SR 16 at Spalding Dr	Eastern	Signal	Overall	B	B	C	C

6. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine the required roadway configuration for the planned improvement to the US 19/41 ramps intersections. To accommodate these improvements, SR 16 will require widening. Installation of a new parallel bridge is proposed to provide sufficient width to provide for an additional westbound through lane. Sufficient width for future dual left-turn lanes onto the US 19/41 southbound ramps will also be provided. The US 19/41 southbound on-ramp will be widened to receive vehicles from the possible dual left turn lanes. In addition, an eastbound left-turn lane from SR 16 onto the northbound on-ramp to US 19/41 will be provided and the SR 16 pavement markings will be modified to allow free right turns from the northbound US 19/41 exit ramp. The second westbound through lane will continue to Pine Hill Road with a flush median. The opening year for this project is 2015. Design year (2035) traffic volumes were used to determine future operational needs. The following tasks were performed:

- Developed existing and 2015 peak hour traffic volumes at the intersections on SR 16 between Pine Hill Road and Spalding Drive;
- Performed accident analysis of the study corridor to determine that the frequency and severity of vehicular crashes were higher than reported on similar roadways throughout the state for the years 2005 to 2008;
- Performed capacity analyses for the study intersections, for existing conditions, opening year 2015 volumes, and design year 2035 volumes; and
- Performed traffic signal warrant analyses for the intersections of SR 16 and Carver Road, SR 16 and US 19/41 SB Ramps and SR 16 and US 19/41 NB Ramps to determine if opening year 2015 volumes are likely to warrant installation of traffic signals at these intersections.

The capacity analyses for the No Build conditions show that the intersections of SR 16 with the US 19/41 ramps will operate inadequately for both 2015 and 2035 peak hour traffic volumes. With the build conditions, all intersections are expected to operate adequately in the opening year and design year.

The signal warrant analyses for the opening year 2015 traffic volumes indicate that there will be sufficient volumes throughout the day to support installation of traffic signals at the US 19/41 ramps intersections with SR 16. Analyses for these two locations indicate that roundabouts would not be expected to operate adequately in the opening year. Although the Carver Road approaches to SR 16 are not expected to operate adequately during peak hours, it is not expected that the volumes throughout the day would be sufficient by 2015 to support installation of a traffic signal.

The minimum full-width turning lane lengths required are also provided.

GLOSSARY OF TERMS

Annual Average Daily Traffic (AADT): The total volume of traffic on a highway segment for one-year, divided by 365.

Capacity: The maximum traffic flow designation for a segment of roadway or a lane, within the control conditions for that particular segment of roadway or lane, usually expressed in persons per hour or vehicles per hour.

Congestion: Highway congestion results when traffic demand approaches or exceeds the available capacity of the transportation facility(ies).

Impacts: The effects of a transportation project, including (a) direct (primary) effects; (b) indirection (secondary) effects; and (c) cumulative effects.

K-Factor: The percentage of daily traffic volume traveling during the peak hour or design hour.

LOS (Level of Service): A qualitative assessment of a road's operating conditions, expressed in terms of A through F – 'A' being the best LOS.

Peak Hour: The consecutive sixty minutes within a 24-hour period with the highest traffic volume. A peak hour is generally designated for both A.M. and P.M. traffic conditions.

Peak Hour Factor (PHF): The ratio of total traffic occurring during the peak hour to the peak 15-minute flow rate (4 times the maximum 15 minute volume) within the peak hour.

Volume: The number of persons or vehicles passing a point on a lane, roadway or other trafficway during some time interval, often taken to be one hour, expressed in vehicles.

Volume-to-Capacity ratio (v/c): The ratio of volume (v) to capacity (c) for a traffic facility.

EXPLANATION OF LEVEL OF SERVICE

Capacity analyses of the study intersections were completed using procedures in the Transportation Research Board's *Highway Capacity Manual (HCM), 2000*. This is the usual methodology for the analysis of traffic conditions. The software programs *Synchro 6* and *HCS* (nationally recognized computer software packages for analyzing capacities and Levels of Service) were used to perform the actual capacity analyses for the key intersections and roadway segments.

Intersection Analysis Methodology

Operating conditions at intersections are evaluated in terms of Levels of Service (LOS). LOS A through D are generally considered to be adequate peak hour operations. LOS E and F are caused by longer vehicular delays and may be considered inadequate.

Levels of Service for signalized intersections are reported in composite fashion, i.e., one LOS for the entire intersection, and are based on average control delay. Individual turning movements at a signalized intersection may experience inadequate LOS, particularly where those volumes are relatively low, while the intersection as a whole has an adequate LOS. This is because the major movements on the major roadway are given priority in assigning signal green time.

Traffic conditions at unsignalized intersections, with STOP sign control on the minor street only, are evaluated for the minor street approach(es) and for the left turns from the major street. This is because the major street traffic is assumed to have no delay since there is no control (no STOP sign). Inadequate Levels of Service for minor street approaches to unsignalized intersections are not uncommon, as the continuous flow traffic will always get the priority.

For two-way STOP controlled intersections, the *HCM* does not calculate a composite Level of Service for the entire intersection. For this reason, the Intersection Capacity Utilization (ICU) method is used to show the intersection LOS. The ICU output is analogous to the intersection volume-to-capacity ratio. This is different from the methodology used for the HCM LOS. The ICU LOS provides a valuable measure of the difference in LOS expected under different traffic volume and lane configuration scenarios for the entire intersection under unsignalized conditions.

Levels of Service for all-way STOP controlled intersections are reported both for key intersection movements, and in composite fashion, i.e., one LOS for the entire intersection, and are based on average control delay.

The *HCM* Level of Service criteria for signalized and unsignalized intersections are shown in the following table:

Highway Capacity Manual Intersection Level of Service Criteria

LOS	Control Delay (seconds per vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	> 80	> 50

Source: Highway Capacity Manual

Roadway Segment Analysis Methodology

Operating conditions along roadway segments are evaluated in terms of LOS. The LOS is assigned to a roadway segment based on the average running speed for one of four specific classes of arterial roadway. The arterial roadway is designated as Class I through IV dependent on the distances between intersections and the speeds of the roadway segments between intersections. Similar to intersection analysis, LOS A through D are typically considered desirable. LOS E is sometimes considered adequate and LOS F is generally considered an inadequate condition. The *Highway Capacity Manual* Level of Service criteria for roadway segments is shown in the following table:

Highway Capacity Manual Road Segment Level of Service Criteria

Level of Service	Average Travel Speed (mph)			
	Class I	Class II	Class III	Class IV
A	>42	>35	>30	>25
B	>34 and ≤42	>28 and ≤35	>24 and ≤30	>19 and ≤25
C	>27 and ≤34	>22 and ≤28	>18 and ≤24	>13 and ≤19
D	>21 and ≤27	>17 and ≤22	>14 and ≤18	>9 and ≤13
E	>16 and ≤21	>13 and ≤17	>10 and ≤14	>7 and ≤9
F	≤16	≤13	≤10	≤7

Source: *Highway Capacity Manual*, 2000 Edition.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: NH000-0001-04(062), Spalding County
P. I. No.: 332890
SR 3/US 19 Turn Lanes @ SR 16

OFFICE: Engineering Services

DATE: February 9, 2009

FROM: Ronald E. Wishon, Acting Project Review Engineer RW

TO: Michael A. Haithcock, P.E., Assistant State Consultant Design Engineer
Attention: Karyn Matthews, Project Manager

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD)				
R-1& R-11	Retain the existing curb and gutter on the northeast side of SR 16.	Proposed= $16,874 Actual= $147,231	Yes	This should be done.
R-2	Eliminate the raised concrete median on SR 16 bridge in order to widen the two SR 3/US 19 southbound left turn lanes.	Proposed= $4,632 Actual= $57269	Yes	This should be done.
R-3	Retain the existing SR 3/US 19 southbound exit ramp and widen as needed in lieu of relocating 33 feet west.	Proposed= $249,667 Actual= $416,307	Yes	This should be done.
R-4	Design a single access to the properties using Carver Road as a common access.	$12,980	No	Presents circuitous route to homes. Creates issues with property division. Will require redesign costs.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD)				
R-5	Eliminate curb, gutter and sidewalks on the northwest side SR 16.	Proposed= $34,159 Actual= $139,802	Yes	This should be done.
R-6	Use 12-foot wide in lieu of 16-foot wide shoulders on SR 16.	$168,070	Yes	This should be done.
R-7	Construct the intersection on SR 16/SR 3/US 19 southbound side using concrete pavement.	($12,544)	Yes	This should be done. This will match the concrete pavement on each end. GDOT Construction Division endorses this recommendation.
R-8	Use grassed medians in lieu of concrete.	$62,851	Yes	This should be done, may need to clarify. Contingent upon comments.
R-9	Use 3:1 slopes in lieu of 2:1 where possible on southside of SR 16.	Design Suggestion	No	Based on updated survey, guardrail would be required. Carver Road can be done.
R-10	Redesign curve KC 131 for the superelevation transition length and drainage structure.	$5,143	No	Additional construction cost is $18, 619. Additional redesign work needed.
R-13	Reduce the width of the SR 3/US 19 southbound entrance ramp by four feet.	Proposed= $227,348 Actual= $17,640	Yes	A four foot reduction from 20 feet to 16 feet does not work. A two foot reduction from 20 feet to 18 feet does work.
R-14	Make the SR 3/US 19 southbound entrance radius longer to improve left turn movement.	Proposed= ($1,386) Actual= ($9,885)	Yes	This should be done.
R-15	Use 11-ft. wide lanes in lieu of 12-ft. wide lanes on Carver Road.	$42,880	No	High accident rate, safety issue. Existing Carver Road has 12 foot lanes. School bus route.
R-16	Keep the existing Carver Road as a right-in/right-out access and remove the current right-in/right-out to the bank entrance.	Design Suggestion	No	Safety issues. Within limited access area.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD)				
R-17	Use 6"x24" curb and gutter in lieu of 6"x30".	$19,360	No	Additional costs to redesign drainage. Seven additional drainage structures required at a cost of $17,877.
R-18	Start the second left turn lane before the traffic signal on the east side of the SR 16 bridge.	Design Suggestion	Yes	This should be done.
TRAFFIC (T)				
T-1	Eliminate the sidewalk along entire north side of SR16.	Proposed= $51,435 Actual= $409,083	Yes	This should be done.
T-2	Eliminate sidewalk on one side of relocated Carver Road.	$25,780	Yes	This should be done.
T-3	Keep the existing Carver Road open and make a right-in/right-out access to SR 16. In addition, Tee-in the relocated Carver Road to existing in lieu of merging.	$688,173	No	Recommendation would result in taking the house anyway. The cost savings shown indicate saving the house.
BRIDGE (B)				
B S-1	Reduce the width of the SR 16 bridge by reducing the median width.	Proposed= $166,794 Actual= $218,743	Yes	This should be done.
B S-2	Minimize the intermediate pier piling conflicts with the existing piles.	Design Suggestion	Yes	This should be done.
B S-3	For Maintenance of Traffic during construction, use two lanes of traffic in each direction in phase 1.	Design Suggestion	No	Temporary barrier cannot be bolted through the flanges of the new Bulb Tee beams and still leave enough room for staging.
B S-4	Remove the sidewalk from the north side of the SR 16 bridge and retain a 6-foot wide shoulder.	Proposed= $18,911 Actual= $13,191	Yes	This should be done.

A meeting was held on February 6, 2009, to discuss the above recommendations. Michael Haithcock, Karyn Matthews, and Tom Cox with the Office of Program Delivery and Mark Hanson, Helen Hawkins, and Paul Cook with Columbia Engineering and Ron Wishon, Lisa Myers and Douglas Fadool with Engineering Services were in attendance.

Approved: Gerald M. Ross **Date:** 2/10/09
Gerald M. Ross, P. E., Chief Engineer

REW/DMF

Attachments

c: Genetha Rice-Singleton
Michael Haithcock
Stanley Hill
Karyn Matthews
David Norwood
Tom Cox
Paul Liles
Bill Ingalsbe
Bill DuVall
Joe King
Paul Alimia
James Magnus
Lamar Pruitt
Craig Sewell
Ken Werho
Lisa Myers
General Files

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE NH000-0001-04(062), Spalding County
PI No. 332890
SR 3/US 19 Turn Lanes at SR 16 in Griffin

OFFICE Atlanta

DATE January 12, 2009

FROM Michael A. Haithcock, P.E.,
Assistant State Consultant Design Engineer

TO Ronald E. Wishon, Acting Project Review Engineer
Attention: Lisa Myers, Design Review Engineering Manager/VE Coordinator

SUBJECT **VALUE ENGINEERING STUDY – FINAL REPORT RESPONSE**

Below are the responses to the Value Engineering Study conducted on November 3-6, 2008 for the above referenced project. Each comment was studied and addressed by both the Department's Project Manager and the Consultant's Project Manager:

SR 3/US 19 Turn Lanes at SR 16 in Griffin

ROADWAY:

Value Engineering Roadway Alternative Nos. 1 & 11 – Retain the existing curb and gutter on the northeast side of SR 16.

COMMENTS: The recommendation of retaining the existing curb and gutter on the northeast side of SR 16 has been reviewed and considered. The northeast side of SR 16 from STA 152+68 LT (intersection of SR 16 at the northbound ramps) to STA 157+93 LT has existing rural shoulders with guardrail. The existing curb and gutter begins at STA 157+93 LT and extends beyond the project limits towards downtown Griffin. There is a potential cost savings by retaining the existing rural shoulder and guardrail, which will minimize the impacts to the wetlands. The proposed 20-foot extension of a 7 x 6 box culvert, curb and gutter, sidewalk, drainage structures, and the required ROW will be eliminated. The amounts of earthwork and asphalt overlay will be reduced significantly. The K-value for the proposed vertical sag curve to the east of the bridge will be lower, thus reducing the overlay section by approximately 400 linear feet. The existing SR 16 profile must be raised several feet to accommodate the new bridge's vertical clearance over SR 3/US 19 on the east side. The existing splitter islands at the northbound ramps will need to be replaced. The new construction cost savings would be $147,231 versus the estimated $16,874 from the VE study.

(We recommend the implementation of a variation of this design alternative contingent upon above comments).

Value Engineering Roadway Alternative No. 2 – Eliminate the raised concrete median on SR 16 bridge in order to widen the two SR 3/US 19 southbound left turn lanes.

COMMENTS: The elimination of raised concrete median on the SR 16 bridge to provide dual 15-foot left turn lanes will be beneficial for the high truck traffic using these lanes. However, this will result in an abnormally wide double yellow line and it may also require a 2-foot wide striped island to maintain the originally proposed overall bridge width to avoid shifting all the approaching lanes, including the left turn lanes. It will be more cost efficient by reducing the overall bridge width by 2 feet and maintaining a standard double yellow line. The new construction cost savings for narrowing the proposed bridge by 2 feet would be $52,637 in addition to the VE study's $4,632 for the elimination of the raised concrete median, which is a total savings of $57,269. See Structural Alternative No. 1 for a greater cost savings on the preferred variation of this alternate.

(We recommend the implementation of this design alternate but with reducing the proposed bridge width as stated above).

Value Engineering Roadway Alternative No. 3 – Retain the existing SR 3/US 19 southbound exit ramp and widen as needed in lieu of relocating 33 feet west.

COMMENTS: The recommendation of retaining and widening the existing southbound exit ramp will produce a construction cost savings. The approximate 3 foot grade change at the intersection with SR 16 will require significant amounts of leveling to tie in the southbound exit ramp and temporary pavement to allow the ramp to remain open during construction. The existing shoulders are not in compliance with GDOT's current design policy for ramp shoulder widths and additional earthwork will be required to update the shoulders and to tie the new ramp profile grade into SR 16. By keeping the existing southbound exit ramp horizontal alignment, the limits of construction will be reduced by approximately 950 linear feet. This will produce a significant construction cost reduction by reducing the proposed pavement, guardrail, ROW, and earthwork. The new construction cost savings would be $263,888 in addition to the VE study's $152,419 which is a total savings of $416,307.

(We recommend the implementation of this design alternate).

Value Engineering Roadway Alternative No. 4 – Design a single access to the existing properties using Carver Road as a common access.

COMMENTS: The recommendation of the design a single access point for three driveways in the vicinity of the intersection with Carver Road and the proposed relocated Carver Road was reviewed. This recommendation to have the residential driveway tied to this single access point will require the property owner to travel approximately 300 feet with multiple turns as opposed to the current design to have the property owner travel only 45 feet with a single curve and tying into the relocated Carver Road in front of their property. This design will also create a safety issue with vehicles using the property owner's driveway as a parking area or

dumping ground because a large portion of the driveway will be located within the existing roadway ROW. Providing access to this residential property owner in front of their residence is the preferred design. The two remaining properties utilizing this single access driveway are a bank and a commercially zoned undeveloped area. Sharing a 450 foot long driveway with two commercial properties may create conflicts as to who will maintain the driveway as well as safety issues with vehicles using the driveway as a parking area or dumping ground. In addition, this single access point creates a longer distance for a vehicle to travel to use the bank than via the new location driveway at the relocated Carver Road. The originally proposed design provides the bank with a new driveway access point, which ties directly into the relocated Carver Road. The bank's existing access point on the existing Carver Road should be removed rather than maintained to share the driveway with another commercial property. Finally, the single access driveway will be sufficient for the remaining commercial property, but the existing Carver Road should be obliterated as not to allow vehicles to use the driveway as a parking area or dumping ground. In addition, both ends of the existing Carver Road would need to have cul-de-sacs to keep vehicles from attempting to drive through the old alignment to access SR 16.

(We do not recommend the implementation of this design alternate).

Value Engineering Roadway Alternative No. 5 -- Eliminate curb and gutter and sidewalks on the northwest side of SR 16.

COMMENTS: The recommendation to change the northwest side of SR 16 from a 16-foot urban shoulder to a 10-foot rural shoulder was reviewed. This recommendation will also reduce the need for drainage structures and additional ROW acquisition. This recommendation will provide an additional cost savings of $105,643 for a total cost savings of $139,802.

(We recommend the implementation of this design alternate).

Value Engineering Roadway Alternative No. 6 – Use 12-foot-wide in lieu of 16-foot-wide shoulders on SR 16.

COMMENTS: The recommendation for the utilization of a 12-foot urban shoulder rather than a 16-foot urban shoulder will reduce earthwork, as well as proposed ROW costs. There is one driveway within the project limits on SR 16 requiring a valley gutter, subsequently the sidewalk will be adjusted in that area to provide the correct offset for the sidewalk and valley gutter. Maintenance of the 2-foot grass strip behind the curb and gutter may be a hindrance for state or local governments, but stamped concrete may be used to correct this potential problem, if requested. Although GDOT policies recommend a 16-foot urban shoulder, the Design Policy Manual section 6.6 states that a 12-foot urban shoulder may be used.

(We recommend the implementation of this design alternate).

Value Engineering Roadway Alternative No. 7 – Construct the intersection on SR 16/SR 3/US 19 southbound side using concrete pavement.

COMMENTS: Due to the 17% truck volume on SR 16 and SR 16 being a designated STAA route, it is recommended to use concrete pavement where the predominate movement of the trucks are turning. This will minimize the maintenance costs and time delays associated with potential asphalt maintenance repairs. This alternative will also provide a contiguous concrete pad in the area of heavy left turn movements from the bridge through the intersection to the concrete ramp. There are no cost savings for this design and the potential construction costs will be higher than anticipated from the VE study due to the 3-foot of asphalt leveling and then milling of the asphalt to place the concrete pavement. This area is a critical area for maintenance of traffic, therefore the placement of asphalt, removal of asphalt, and placement of concrete are vital to maintaining traffic through this intersection.

(We recommend the implementation of this design alternate).

Value Engineering Roadway Alternative No. 8 – Use grassed medians in lieu of concrete.

COMMENTS: The original proposed design already included grassed medians everywhere except where median widths were smaller than 8 feet, as per GDOT Standard M-3, Type C Median Crossover. It has been mentioned that the City of Griffin may be interested in maintaining the grassed medians in the future.

(We recommend the implementation of this design alternate contingent upon above comments).

Value Engineering Roadway Suggestion No. 9 – Use 3:1 slopes in lieu of 2:1 where possible on the south side of SR 16.

COMMENTS: The area from STA 156+50 LT through STA 158+50 LT on SR 16 had enhanced survey completed after original cross sections were completed for the VE study. The area now requires 2:1 slopes with guardrail to tie into the existing high fill area. On Carver Road from STA 256+00 LT through STA 257+50 LT, the proposed 2:1 slopes will be modified to 4:1 slopes rather than 3:1 slopes. This area is on new location in a wooded area, therefore, flattening the slopes to 4:1 is safer than using a short 2:1 fill or using a somewhat flatter 3:1 slope. The ROW costs should be minimal in this area.

(We do recommend the implementation of this design suggestion based on the above comments).

Value Engineering Roadway Alternative No. 10 – Redesign curve KC 131 for the super elevation transition length and drainage structure.

COMMENTS: Redesigning the super elevation transition length and drainage structures on Carver Road has been reviewed. The super elevation transition lengths have been corrected. Altering the proposed drainage structures in the radii of the Carver Road and SR 16 intersection will increase rather than decrease the project costs. Shifting the drainage pattern for these pipe systems will create increased costs for redesigning the two drainage systems, as well as utilizing 24" and 30" pipes instead of the proposed 18" and 24" pipes. The catch basins will also be deeper than the proposed structures to accommodate the difference in the pipe sizes. This change will increase the construction costs by $18,619 rather than decrease by $5,143, as stated in the VE study. Additional costs would also be required to redesign the two pipe systems.

(We do recommend the implementation of this design alternate for the super elevation transition but not for the drainage structure redesign, based on the above comments).

Value Engineering Roadway Alternative No. 13 – Reduce the width of the SR 3/US 19 southbound entrance ramp by four feet.

COMMENTS: Reducing the width of the southbound entrance ramp lanes from 14-foot and 20-foot lanes to 14-foot and 16-foot lanes cannot accommodate WB-65 vehicles turning left at the same time, as dictated by Autoturn software. Reducing the southbound entrance ramp lanes to 14-foot and 18-foot lanes will accommodate these design vehicles. We recommend reducing the 20-foot lane to an 18-foot lane. These calculations should have been based on a lane taper rather than the entire length of the ramp. The wider outside lane should taper from a 20-foot lanes to a 12-foot lane based on the design speed, then that lane will be held for the remainder of the required 800-foot section for parallel lanes prior to dropping one. The VE used the assumption that the entire ramp length (2320 feet) would be reduced by 4 feet rather than just the lane taper reducing by 4 feet. The construction cost savings based on an 18-foot lane rather than a 20-foot lane would be $15,435. There would be additional preliminary design rework for this area too, but the costs would be minimal. The VE construction cost savings for reducing the 20-foot lane to a 16-foot lane was $227,348, but should have been $17,640.

(We recommend the implementation of this design alternate using an 18-foot lane rather than a 20-foot lane, contingent upon above comments).

Value Engineering Roadway Alternative No. 14 – Make the SR 3/US 19 southbound entrance radius longer to improve left turn movement.

COMMENTS: The recommendation for changing the southbound entrance ramp radius on the eastern side of the ramp was reviewed. This suggestion will increase construction costs. It will also provide additional pavement for the dual left turn lanes for vehicles from SR 16 onto the

southbound entrance ramp. The sidewalk and handicap ramp on the east side of the ramp will be shifted slightly southward on the ramp with the new radius. This shift will create a 6' shorter distance for the pedestrians to cross the ramp, which will be safer since the ramp configuration does not have a raised island for the pedestrian refuge. The increased construction costs for this alternate will be $9,885.00.

(We recommend the implementation of this design alternate).

Value Engineering Roadway Alternative No. 15 – Use 11-foot-wide lanes in lieu of 12-foot-wide lanes on Carver Road.

COMMENTS: Reducing the proposed lane widths on relocated Carver Road may create additional hazards. The existing Carver Road travel lanes are approximately 12 feet. With school buses using this roadway, the narrower lanes may cause clearance problems as the buses pass each other in opposite directions on the curves. Also, using narrower lanes may cause the drivers to drive more towards the center of the roadway and shy away from the outside edge of travel. A design variance would be required to use the narrower lanes. In addition, the transition from 12-foot to 11-foot lanes would be in a curve causing unnecessary driver expectation problems on a road heavily traveled by high school aged drivers.

(We do not recommend the implementation of this design alternate).

Value Engineering Roadway Suggestion No. 16 – Keep the existing Carver Road as a right-in/right-out access to the bank, school parking, and existing properties and remove the current right-in/right-out to the bank entrance.

COMMENTS: Keeping the existing Carver Road open and making a right-in/right-out access onto SR 16 and teeing in relocated Carver Road will create several problems. First, the right-in/right-out radius will tie into the dedicated right turn lane for the southbound entrance ramp, which is less than 10 feet from the proposed radius return for the southbound ramp, creating weaving conflicts for vehicles on Carver Road waiting to navigate to one of the through lanes on SR 16. Also, right turning vehicles with right turn indicators on to use the ramp rather than Carver Road will confuse drivers. Secondly, the construction limits for teeing in the relocated Carver Road will still require that the first residential property on the southwest side of this new intersection be acquired, therefore the cost savings for this alternate would be greatly reduced. Third, many of the Griffin high School students use Carver Road to access the student parking lot and creating a left turn yield situation onto the relocated Carver Road may increase the accident rate. The existing Carver Road already has a much higher accident rate than the statewide average for similar roadways. Carver Road is also a local alternate roadway for people from the southwest side of SR 3/US 19 wanting to travel to the northeast side, which is where downtown Griffin is situated, without traveling on SR 3/US 19.

(We do not recommend the implementation of this design suggestion).

Value Engineering Roadway Alternative No. 17 – Use 6" x 24" curb and gutter in lieu of 6" x 30".

COMMENTS: Although using a 6" x 24" curb and gutter section in lieu of a 6" x 30" section presents a $19,360 construction cost savings, there will be additional preliminary engineering costs to redesign the proposed drainage areas, structure locations, drainage profiles for the longitudinal systems, cross sections, and plan view. Using the smaller gutter section reduces the gutter spread and will require approximately 7 additional drainage structures at a cost of $17,877. In addition, with SR 16 having a high truck percentage, there is a potential for additional maintenance costs for the narrower curb and gutter if these vehicles drive over them. For instance, the wider gutter section spreads the additional load over a bigger area, reducing the failure rate. Also the narrower gutter section will separate from the edge of pavement more so than the wider section due to rotation on the outside of the section when a truck travels over the curb and gutter. And finally, GDOT Standard 9032B as well as the Design Policy Manual Section 6.5.3 state that 2.5-feet is the standard width for curb and gutter, therefore a design variance would be required to use the smaller curb and gutter.

(We do not recommend the implementation of this design alternate).

Value Engineering Roadway Suggestion No. 18 – Start the second left turn lane before the traffic signal on the east side of the SR 16 bridge.

COMMENTS: Extending the proposed dual left turn lanes to begin prior to the traffic signal at the northbound ramps will help reduce potential accidents and confusion for negotiating the dual left turns onto the SR 3/US 19 southbound ramps. It will also allow for additional storage.

(We recommend the implementation of this design suggestion).

STRUCTURES:

Value Engineering Structural Alternative No. 1 – Reduce the width of the SR 16 bridge by reducing the median width.

COMMENTS: Eliminating the raised concrete median on the SR 16 bridge and reducing the overall bridge width by 6 feet provides a construction cost savings without hindering safety, congestion or aesthetics. However, this will require an abnormally wide double yellow line or will require a 2-foot wide striped island to compensate for the remaining 2 feet from the 8-foot raised median section. We propose to reduce the overall bridge width by 8 feet, which will allow for a standard double yellow line, be less confusing, and will be more cost efficient. The new construction cost savings would be $218,743 versus the VE study's $166,794.

(We recommend the implementation of this design alternate but with reducing the existing bridge width by 8 feet, as stated in the comments above).

Value Engineering Structural Suggestion No. 2 – Minimize the intermediate pier piling conflicts with the existing piles.

COMMENTS: Minimizing the intermediate pier piling conflicts with the existing piles will be a function of the construction staging geometry and the structural efficiency of the intermediate bent designs. The conflicts will be minimized as much as possible during the final bridge design phase.

(We recommend the implementation of this design alternate).

Value Engineering Structural Suggestion No. 3 – For Maintenance of Traffic during construction, use two lanes of traffic each direction during phase 1.

COMMENTS: The Columbia team had already considered this option for Maintenance of Traffic during construction and using two lanes of traffic in each direction was not considered possible. A Stage 1 construction width of 33'-6" would be required to accommodate two 10-foot lanes with 2-foot shoulders as the temporary barrier cannot be bolted through the flanges of the new Bulb Tee beams. Widening the Stage 1 construction to 33'-6" would require a longer intermediate bent cap to support the widened section. The longer intermediate bent cap would conflict with the existing intermediate bent 3 caps (available width is too narrow to work at this location).

(We do not recommend the implementation of this design suggestion).

Value Engineering Structural Alternative No. 4 – Remove the sidewalk from the north side of the SR 16 bridge and retain a 6-foot-wide shoulder.

COMMENTS: Removing the sidewalk from the north side of the proposed bridge and utilizing a 6-foot wide rural shoulder has potential costs savings due to the reduced bridge width, as well as improving the pedestrian safety through using only one side of the bridge for pedestrian traffic. However, this alternate will require a design exception. Following the GDOT TOPPS 4265-10 policy requires a 10-foot bridge shoulder for rural multi-lane roadways when using a rural roadway shoulder approaching the bridge. If this design alternate is used in conjunction with Roadway Alternate 5 and/or Traffic Alternate 1, then the alternate becomes plausible because these alternates propose to convert the urban shoulder on the north side of SR 16 to a rural shoulder. Without approval of these additional alternates, this alternate becomes invalid. We proposed to utilize a 10-foot rural bridge shoulder on the north side of SR 16, which will increase the overall bridge width by 2 feet when compared to the proposed bridge width. In addition, combining this alternate with Structure Alternate 1, which removed the raised concrete median, will reduce the proposed overall bridge width by 6 feet. For the maximum cost savings with the best safety design, it is recommended that Structure Alternate 1 with an 8-foot bridge width reduction be used in conjunction with this alternate, but utilizing a 10-foot bridge shoulder. Roadway Alternate 5 and/or Traffic Alternate 1 will also be required for this alternate to be valid because the bridge shoulder will need to tie into rural roadway shoulders.

The construction cost savings associated with using a 10-foot rural bridge shoulder versus using a 6-foot rural bridge shoulder across the proposed bridge is $13,191 versus $18,911 (which is from VE study), respectively. However, there are additional costs for altering the roadway and bridge footprints, but when combined with other recommended alternates, the redesign costs can become redundant due to the multiple roadway and bridge redesigns required on the other alternates. The construction cost savings for this alternate are $13,191.

(We recommend the implementation of this design alternate with the above stipulations).

TRAFFIC:

Value Engineering Traffic Alternative No. 1 – Eliminate the sidewalk along the entire north side of SR 16.

COMMENTS: The removal of the proposed sidewalk along the north side of SR 16 is a sizable construction cost reduction. However, altering the entire north side of SR 16 from a 16-foot urban shoulder to a 10-foot rural shoulder has a much greater potential costs savings through reducing proposed curb and gutter, sidewalk, earthwork, urban drainage systems/structures, and ROW, as well as fewer impacts to a wetland area. The total construction cost savings for altering the north side of SR 16 from an urban to a rural shoulder would be $409,083 versus keeping the urban shoulder but removing the sidewalk, which is $51,435 from the VE study.

(We recommend the implementation of this design alternate with the above mentioned changes).

Value Engineering Traffic Alternative No. 2 – Eliminate the sidewalk on one side of relocated Carver Road.

COMMENTS: The elimination of the sidewalk on one side of relocated Carver Road is a construction cost saving. The existing Carver Road does not have existing sidewalk, so placing sidewalk on one side will minimize the number of conflicts at the tie point with the existing roadway. In addition, we recommend placing the sidewalk on the western side of relocated Carver Road because Griffin High School and the student parking lot driveway are on the western side of the roadway. The VE construction cost savings for this alternate are $25,780.

(We recommend the implementation of this design alternate).

Value Engineering Traffic Alternative No. 3 – Keep the existing Carver Road open and make a right-in/right-out access to SR 16. In addition, Tee-in the relocated Carver Road to existing in lieu of merging.

COMMENTS: See comment response for Value Engineering Roadway Suggestion R-16.

(We do not recommend the implementation of this design alternate).

PRECONSTRUCTION STATUS REPORT FOR PI:332890-

PROJ ID :	332890-	**SR 3/US 19 TURN LANES @ SR 16 IN GRIFFIN**				**MGMT LET DATE :**	Sep-10
COUNTY :	Spalding					**MGMT ROW DATE :**	Sep-09
LENGTH (MI) :	0.33	**MPO:**	Atlanta TMA	**DOT DIST:**	3		
PROJ NO.:	NH000-0001-04(062)	**TIP #:**	SP-021	**CONG. DIST:**	3	**SCHED LET DATE :**	12/22/2010
PROJ MGR:	Matthews, Karyn M.	**MODEL YR :**	2020	**BIKE:**	N	**WHO LETS?:**	Prepare Plans for Shelf
OFFICE :	Consultant Design	**TYPE WORK:**	Turn Lanes	**MEASURE:**	E	**LET WITH :**	
CONSULTANT:	Consultant Design (DOT contract)	**CONCEPT:**	TURN LANES	**BRIDGE SUFF:**	66.87, 64.51		
SPONSOR :	GDOT	**PROG TYPE:**	Reconstruction/Rehabilitation	**NEEDS SCORE:**	4		
DESIGN FIRM:	Columbia Engineering	**BOND PROJ :**					

SCHED START	*SCHED FINISH*	*ACTIVITY*	*ACTUAL START*	*ACTUAL FINISH*	*%*
		Concept Development	5/14/1999	10/30/2002	100
		Concept Meeting	8/27/1999	8/27/1999	100
		PM Submit Concept Report	9/7/1999	9/7/1999	100
		Receive Preconstruction Concept Approval	9/9/1999	9/9/1999	100
		Management Concept Approval Complete	10/21/2002	10/30/2002	100
	2/24/2009	Value Engineering Study	3/25/2008		85
/13/2009	2/13/2009	Public Information Open House Held			0
	8/13/2009	**Environmental Approval**	**10/24/2002**		24
		Field Surveys/SDE	12/8/1999	1/7/2000	100
	8/27/2009	**Preliminary Plans**	**6/12/2007**		39
	6/12/2009	Preliminary Bridge Design	7/12/2007		25
/13/2009	6/25/2009	Underground Storage Tanks			0
/13/2009	5/28/2009	404 Permit Obtainment			0
/18/2009	9/21/2009	PFPR Inspection			0
/22/2009	11/16/2009	R/W Plans Preparation			0
1/17/2009	**12/4/2009**	**R/W Plans Final Approval**			**0**
		L & D Approval	10/27/1999	10/29/1999	100
2/7/2009	10/26/2010	R/W Acquisition			0
/4/2010	2/17/2010	Stake R/W			0
/13/2009	9/29/2009	Soil Survey			0
/15/2009	10/28/2009	Bridge Foundation Investigation			0
0/27/2009	**8/6/2010**	**Final Design**			0
2/18/2009	7/29/2010	Final Bridge Plans Preparation			0
/30/2010	8/31/2010	FFPR Inspection			0
/14/2010	9/27/2010	Submit FFPR Responses (OES)			0

PROGRAMMED FUNDS

Phase	Approved	Proposed	Cost	Fund	Status	Date Auth
PE	1999	1999	1,110,694.18	Q05	AUTHORIZED	11/4/1998
ROW	2009	2014	8,665,345.94	L050	PRECST	
UTL	2010	2015	395,449.09	L050	PRECST	
CST	2011	2015	22,481,089.85	L050	PRECST	

PE Cost Est Amt:	1,110,694.18	Date:	
ROW Cost Est Amt:	4,916,950.00	Date:	10/10/2008
Utility Cost Est Amt:	249,200.00	Date:	10/10/2008
CST Cost Est Amt:	14,166,900.00	Date:	10/10/2008

STIP AMOUNTS

Phase	Cost	Fund
PE	0.00	Q05
ROW	926,000.00	L050
UTL	0.00	L050
CST	13,904,000.00	L050

District Comments

REVISED CONCEPT REFLECTS FULL INTERCHANGE IMPROVEMENT AND REALIGNMENT OF CARVER RD -NEED REVISED PROJECT DESCRIPTION 2-23-01 - L&D 10-29-99 NOTICE SENT 8-8-01 - UTS COST EST 5-11-01 - (NR) $23,600 - MAY BE CONSULTED 8-29-02 - NEED HIST. AND ARCH. FOR NEPA 11/14/02; NEED AOE TO COMPLETE NEPA 10/1/04

The original project description required replacing the asphalt in the southwest ramp with concrete and widening for two lanes that then drop down to one lane Look at different concepts that include replacing all four(4) ramps. Do cost estimate on each concept.

DD:	[01R] 12-30-99 LR: 6-22-98 ASSIGNED DISTRICT 3
ridge:	BRIDGE REQUIRED
esign:	Columbia Eng| Scale down Revised Concept|PFPR plans ongoing
IS:	CE| Not Apvd| NotOnSchdROWSep09| Alimial2-22-08
GPA:	SPALDING SGN UTIL 1-8-01|GRIFFIN SGN UTIL 9-22-98|RESCISSION LETTER SENT TO GRIFFIN & SPALDING 7-22-05.
rog. Develop:	RW STIP AMENDMENT #5 11-07
rogramming:	PR2/P=2-2-99|#1 2-03|#2 5-06|#3 8-08|#4 12-08
ailroad:	NO
raffic Op:	SEND PLANS FOR PFPR REVIEW 9/30/05
tility:	1st to PM 11/03/08
MG:	RECST/REHAB(LT/RTTRN LANES-CONTROL ONLY)

Prel. Parcel CT:	3	**Total Parcel in ROW System:**		**Cond. Filed:**		**Acquired by:**	DOT	*DEEDS CT:*
Under Review:		**Options - Pending:**		**Relocations:**		**Acquisition MGR:**		
Released:		**Condemnations- Pend:**		**Acquired:**		**R/W Cert Date:**		

Benefit Cost Analysis Work Sheet
CONGESTION Projects

NH-001-4(62)
PI # 332890
SPALDING COUNTY

SR 3/US 19 Turn Lanes at SR 16 in Griffin

Congestion Benefit = Tb + CMb + Fb

Person Time Savings Benefit (Tb)

*Db (hrs)	0.025
ADT	27,050.00
Tb ($s)	$23,246,093.75

Commercial or Truck Time Savings Benefit (CMb)

Db (hrs)	0.025
% Truck Traffic	0.08
ADT	27,050.00
CMb	$9,825,912.50

Fuel Savings Benefit (Fb)

ADT	27,050.00
Fb ($s)	$8,100,911.46

Total Congestion Benefit	**$41,172,917.71**
Total Project Cost	**$11,613,570.00**
B/C Ratio	**3.55**